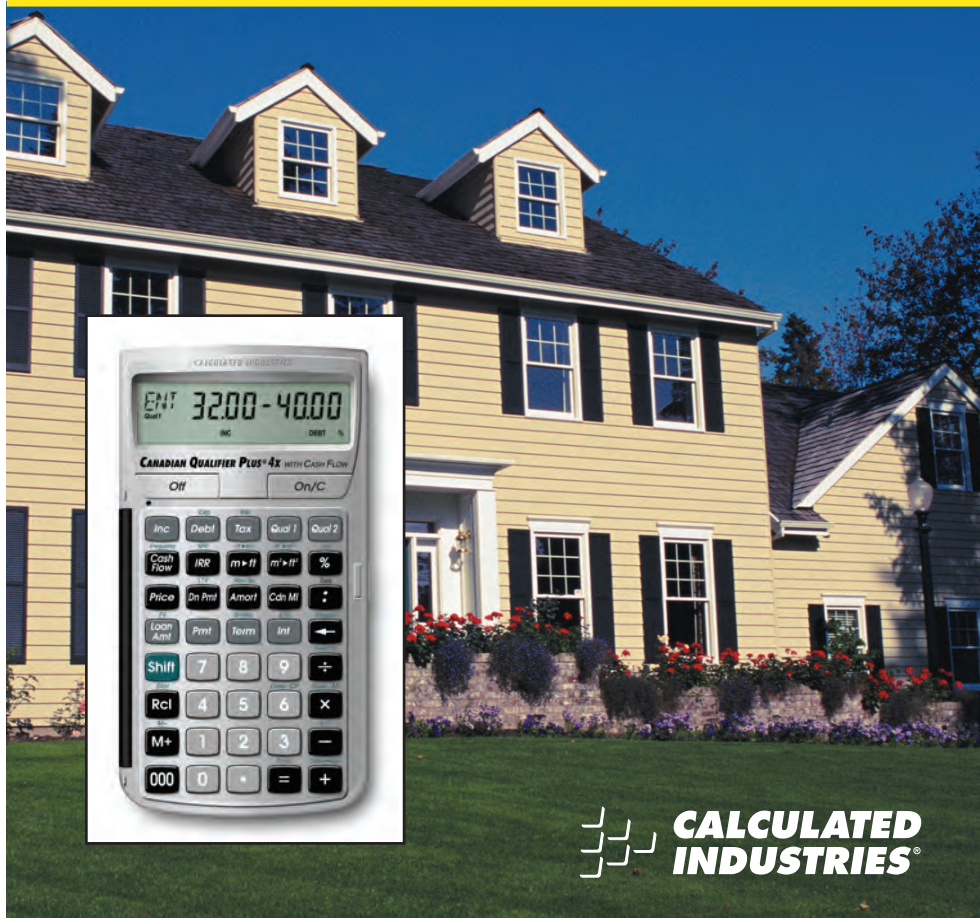


# CANADIAN QUALIFIER PLUS<sup>®</sup> 4x

ADVANCED REAL ESTATE FINANCE CALCULATOR with CASH FLOW  
and BUILT-IN CANADIAN INTEREST MODE

## Model 3423 User's Guide



## ***Introducing the CANADIAN QUALIFIER PLUS® 4x Mortgage Calculator***

The *Canadian Qualifier Plus 4x* was designed specifically for mortgage lenders, residential real estate agents and brokers for quick mortgage calculations in the office or out in the field. It's the most complete and intuitive calculator of its kind. With the push of a few buttons, *it will instantly pre-qualify prospective buyers, find monthly payments, and solve hundreds of mortgage problems!*

### ***Features:***

- Easy and Complete Buyer Pre-Qualifying — with “Smart” Keys for quick financing solutions or comparisons
  - Find Qualifying Mortgage Amount, Income Required and Maximum Allowable Debt
  - Use two different Qualifying Ratios at once to compare mortgage scenarios
  - Compare “Restricted” with “Unrestricted” Qualifying Mortgage Amount
  - Flexible “what-if” Mortgage or TVM Calculations — *Finds Mortgage Amount, Term, Interest or Payment*
  - Instant P&I and Total (PITH) Payment
  - Includes Property Tax, Mortgage Insurance and Heating Expense
  - Built-in Sales Price and Down Payment
  - Instant Loan-to-Value (LTV)
  - Works in Annual or Periodic Term and Interest
  - Works in Canadian or U.S. Interest
  - Date Math, Month Offset, and Odd-Days Interest (ODI)
  - Complete Amortization
  - Remaining Balance/Balloon Payment
  - Bi-Weekly Mortgages
  - Trust Deeds
  - Future Value and Appreciation
  - Also works as a Standard Math Calculator
  - ***U.S. Mode***, including additional features: APR and Total Finance Charges, PITI/Total Payment, Interest-Only Payment and Complete U.S. Buyer Pre-Qualifying, including Tax, Insurance, and Mortgage Insurance
- 
- Cash Flows/Investment Analysis (IRR, NPV, NFV)
  - Effective Interest Rate (EFF%)
  - Metric/Imperial Conversions

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## GETTING STARTED

### KEY DEFINITIONS

#### Basic Operation Keys

<b>Off</b>	Turns all power off. The memory and most financial registers are cleared.
<b>On/C</b>	If calculator is off, turns power on. If calculator is on, a single press clears the last entry while a second press in succession clears non-permanent entries.  <i>Note: Clears Loan Amount, Payment, Price, Down Payment, Income, Debt, Expense, and Canadian Mortgage Insurance.</i>
<b>+ − × ÷ =</b>	Arithmetic operation keys.
<b>0 – 9</b>	Keys used for entering numbers.
<b>000</b>	Triple-zero key (saves time when entering 000 values).
<b>←</b>	Backspace key (deletes incorrect entries one digit at a time).
<b>.</b>	Decimal point.
<b>%</b>	<b>Percent</b> — Four-function (+, −, ×, ÷) percent key. See <b>page 17</b> for examples.
<b>M+</b>	<b>Memory</b> — Adds the displayed number to the independent cumulative memory. Pressing <b>Shift M+</b> (M−) will subtract the displayed value from the cumulative memory. Pressing <b>Rcl M+</b> recalls and displays the memory contents. Pressing <b>Rcl Rcl</b> displays and clears the memory. See <b>page 14</b> for details.
<b>Rcl</b>	<b>Recall</b> — Recalls and displays the contents of the financial registers (e.g., <b>Rcl Int</b> ). Also used for Memory functions.
<b>Shift</b>	Used to set the number of displayed decimal places (see section on Decimal Place Selection, <b>page 10</b> ). Also works with other keys to set or activate additional functions. (Think of it as a “shift” key on a typewriter.) It will perform the function printed above the key on the calculator's face.

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**Shift** **±**

**Change Sign (+/-)**— Changes the sign of the displayed value from positive to negative or vice versa.

**Shift** **✕**

**Clear All**— Clears all entered values and returns any stored values to their default settings. Use this only with caution, as it will reset ratios, payments per year, decimal places, etc. back to their defaults (see the Appendix for a list of these settings).

*Note: Clear All will not affect any changes made to Preference Settings.*

**Canadian Mode:** **Shift** **✕** will also return your calculator to Canadian Mode if you previously activated U.S. Mode via **Shift** **+**.

**Shift** **=**

**Preferences (Prefs)**— Activates the Preference Mode, where you can program custom settings (see **page 12**).

**m** **→** **ft**

**Meters to Feet**— Converts entered value from meters to feet.

**Shift** **m** **→** **ft**

**Feet to Meters (ft → m)**— Converts entered value from feet to meters.

**m<sup>2</sup>** **→** **ft<sup>2</sup>**

**Meters<sup>2</sup> to Feet<sup>2</sup>**— Converts entered value from square meters to square feet.

**Shift** **m<sup>2</sup>** **→** **ft<sup>2</sup>**

**Feet<sup>2</sup> to Meters<sup>2</sup> (ft<sup>2</sup> → m<sup>2</sup>)**— Converts entered value from square feet to square meters.

**Shift** **%**

**Delta Percent (Δ%)**— Finds the percent change between two values.

## **Mortgage / Time-Value-of-Money Keys**

---

The following keys let you solve Mortgage or Time-Value-of-Money (TVM) problems, such as finding a Mortgage Payment, Term, Interest, Future Value, or Amortization. Other useful keys, such as Price and Down Payment, are also included. These keys let you demonstrate various “what-if” mortgage scenarios to your clients.

**Loan**  
**Ami**

**Loan Amount**— Enters or solves for the initial mortgage amount or present value of a financial problem.

**Pmt**

**P&I and Total Payment**— Multi-function payment key. Enters or solves for the Periodic Principal and Interest (P&I) payment. In Canadian Mode, a second press of the **Pmt** key calculates the Total Payment (includes monthly property tax, insurance, heating expense, and other applicable housing expenses, such as condo fees). If entered, Canadian Mortgage insurance is included in both P&I and Total Payment. In U.S. mode, a second press of the **Pmt** key calculates the PITI payment (adds monthly property tax and insurance to P&I payment). Pressing a third time in U.S. mode calculates the total payment (PITI plus expenses). The fourth press calculates the interest-only payment.

**Term**

Enters or solves for the number of years. Second press gives the number of periods. An entered term greater than 59 will be classified as periodic, not annual.

*Note:* Term is stored permanently, until you change it or perform a Clear All (**Shift** **X**). You may enter a periodic term, if you prefer, by pressing the **Shift** **←** (Periodic) keys prior to pressing **Term** (e.g., **3** **6** **Shift** **←** **Term** instead of **3** **Term**).

**Int**

**Interest**— Enters or solves for the annual interest rate. Second press gives the periodic rate.

*Note:* Interest is stored permanently, until you change it, by performing a “Clear All” (**Shift** **X**), or reset.

**Shift** **Int**

**Effective Interest Rate (Eff%)**— Converts value stored as interest to equivalent U.S. rate.

**Shift** **Loan Amt**

**Future Value (FV)**— Enters or solves for the future value of a financial problem.

**Price**

**Sales Price**— Enters or calculates Sales Price based on the entries of Mortgage Amount (or equivalent mortgage components) and Down Payment.

*Note:* An entered Sales Price will not normally change.

**Dn Pmt**

**Down Payment**— Enters (in either percent or dollars) or calculates Down Payment, based on the entries of Mortgage Amount (or equivalent mortgage components) and Sales Price. A second press changes the entered down payment from a dollar figure to a percent, or vice versa.

*Note:* Any number under 100 is assumed to be a percent down payment. You do not have to label the value as a percent.

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**Shift** **Dn Pmt**

**Loan-to-Value (LTV)** — Calculates the Loan-to-Value percent when a Down Payment and Sales Price, Mortgage Amount/Down Payment, or Mortgage Amount/Sales Price are entered. Also calculates the above dollar values if an LTV percent and one of the above values are entered (e.g., entered Sales Price and LTV percent will calculate Down Payment and Mortgage Amount).

**Shift** **←**

**Periodic** — Used to specify a mortgage component (Term or Interest) or Amortization/Remaining Balance entry as periodic rather than yearly. For example, **3 0 Shift ← Term** enters 30 periods. Also used to identify Periodic Income, Tax Insurance, and Mortgage Insurance.

**Shift** **÷**

**Payments per Year (Pmt/Yr)** — Used to set the number of payment periods per year. Default value is 12, for monthly.

*Note: You can store the number of payments/year permanently or semi-permanently. See "Preference Settings" on page 12).*

**Amort**

**Amortization (Amort)** — Finds Total Interest, Principal, Remaining Balance, and Remaining Term.

The output of this key is as follows:

**Press Display or Calculation**

- |   |                                            |
|---|--------------------------------------------|
| 1 | Displays range of periods                  |
| 2 | Calculates Total Interest for period range |
| 3 | Displays Total Principal for range         |
| 4 | Calculates Total Principal and Interest    |
| 5 | Calculates Remaining Balance               |
| 6 | Calculates Remaining Term                  |

**Shift** **Amort**

**Remaining Balance (Rem Bal)** — Displays the Remaining Balance when preceded by a single year or range of years (or individual payment or range of payments by also using the **Shift** **←** keys). Note that you can also see the Remaining Balance by cycling through the **Amort** key.

**:**

**Colon Separator (Date)** — Used as a separator for entering dates, qualifying ratios, and amortization ranges.

**Shift 000**

**Month Offset** — Used to set the first month of payment if other than January (e.g., Month 3).

**Shift :**

**Odd-Days Interest (ODI)** — Calculates the pre-paid interest, or simple interest accumulated (based on a 360-day year) during the days before the first mortgage payment is made, using the interest rate stored in the Interest register. (U.S. Mode only.)

**Shift Term**

**Bi-Weekly (Bi-Wkly)** — Converts a regular monthly loan to a Bi-Weekly loan, where the buyer may realize significant interest savings. After loan variables are entered, pressing **Shift Term** displays the Bi-Weekly Term (i.e., reduced term). The second press of **Term** shows the total interest savings; third press displays the total interest paid; fourth press displays the total principal; and fifth press displays the total principal and interest paid. Pressing **Pmt** will calculate the Bi-Weekly payment. Pressing **Shift Term** again will exit Bi-Weekly mode and re-calculate to the original term. Pressing **On/C** twice will also exit Bi-Weekly mode.

## Qualifying Keys

### What are Canadian Qualifying Ratios?

According to the Canadian Mortgage and Housing Corp. (CMHC), the first rule in Canadian qualifying is that monthly housing costs should not exceed 32% of gross monthly income (this is called the Gross Debt Service, or GDS ratio). Housing costs include monthly Principal and Interest, Property Taxes and heating expenses. If applicable, PITH can also include half the condominium fees and the annual site lease if it's a leasehold tenure.

The second qualifying rule is that the total monthly costs (i.e., monthly housing costs *plus* other long-term debt, such as car loans and credit card payments) shouldn't exceed 40% of gross monthly income (this is called the Total Debt Service, or TDS ratio).

**Qual 1**

**(Qualify Based on GDS:TDS ratios of 32%-40%)**

— A multi-function key which, based on entered variables, performs the following pre-qualifying functions:

(Cont'd)

(Cont'd)

**1) Stores Canadian GDS:TDS ratios** for mortgage qualifying. Entered ratios are separated by the Colon **:** key. For example, income and debt ratios of 32% and 40%, respectively, are entered and permanently stored as follows: **3 2 : 4 0 Qual 1**. Default income and debt ratios for this key are 32% and 40%, respectively. You may change these ratios, if desired.

**2) Calculates the maximum mortgage amount** for which a buyer may qualify, based on the stored income and debt qualifying ratios and the entered:

- Term
- Interest
- Annual Income
- Monthly Debt
- Down Payment
- Monthly Property Taxes
- Monthly heating expense and other monthly housing expenses, if applicable (e.g., condo fees)

The output of this key is as follows:

**Press Calculation**

- |   |                                                      |
|---|------------------------------------------------------|
| 1 | Displays stored Qualifying Ratios<br>(e.g., 32%:40%) |
| 2 | Maximum Qualifying Mortgage Amount<br>(restricted)*  |
| 3 | Buyer's Actual Ratios (Income%:Debt%)                |
| 4 | Unrestricted Qualifying Mortgage Amount*             |
| 5 | Maximum Allowable Debt                               |

*\*The Maximum Qualifying Loan Amount displayed is the "restricted" loan amount that the buyer may qualify for. This loan amount is based on whichever of the two ratios, income or debt, limits the buyer the most. If the buyer's maximum qualifying loan amount is restricted by their income, then the unrestricted qualifying loan amount will also be displayed. The unrestricted qualifying loan amount is based purely on the buyer's income and is not restricted by their debt. If the maximum qualifying loan amount is restricted by their debt, the unrestricted qualifying loan amount will not be displayed. This is useful to show clients what size loan they could qualify for if they paid off debt or increased income. Here, the calculator will display the loan amount with "UNR" (for unrestricted) and "INC" (based on income).*

*Note: This restricted/unrestricted qualifying mortgage comparison is useful to show clients what size loan they could qualify for if they paid off debt or increased income.*

**3) Calculates the annual income required and allowable monthly debt** for a desired mortgage amount or sales price based on the stored income and debt qualifying ratios and the entered:

- Term
- Interest
- Price (down payment) or mortgage amount

**4) Also finds buyer's actual income and debt ratios** given both buyer and property data. By default, the first press of **Qual 1** displays the stored qualifying ratios and the 2nd press calculates the buyer's actual ratios.

**Note on U.S. Qualifying:** If the calculator is in *Canadian Mode* (see **page 11**) and you want to qualify in *U.S. Mode*, activate U.S. Mode via **Shift +** and enter new U.S. Qualifying Ratios into the **Qual 1** and **Qual 2** keys.

**Qual 2**

**(Qualify Based on 35%-42%)** — Stores additional Income and Debt ratios and operates identically to the **Qual 1** key. Default Income and Debt ratios for this key are 35% and 42%, respectively.

*Note:* You may store whatever ratios you desire in the **Qual 1** or **Qual 2** keys.

**Inc**

**Income** — Enters the buyer's *annual* income for mortgage qualifying. Or, enters a monthly income when preceded by the **Shift** **←** keys (e.g., **5 000** **Shift** **←** **Inc** enters a monthly income of \$5,000).

**Debt**

Enters buyer's long-term, *monthly* debt (e.g., car payments, credit cards with large balances/long-term monthly payments).

**Shift** **Debt**

**Expense (Exp)** — Enters monthly heating or other housing expenses (e.g., condominium fees) for calculating the Total (PITH) Payment or for Qualifying.

**Cdn MI**

**Canadian Mortgage Insurance** — Used to enter mortgage insurance. Can be entered as a percentage or a dollar amount. Numbers over ten will automatically be considered a dollar amount.

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**Tax**

**Property Tax** — Used for calculating PITI and Total (PITH) payment, and Qualifying. Stores estimated annual property tax in either percent or dollar amount. If entered as an annual dollar amount, a press of **Tax** converts to the monthly tax amount, and pressing **Tax** again converts to the annual percent rate. If entered as a percent, pressing **Tax** converts to the annual dollar amount, and pressing **Tax** once more shows the monthly tax.

*Note: Entering a number equal to or less than ten is assumed to be an annual percent. Property tax is calculated from the sales price (therefore, you should also enter a Down Payment).*

**Shift Tax**

**Property Insurance (Ins)** — Used for calculating the PITI payment and for Qualifying. Stores estimated annual property or homeowner's insurance in either percent or dollar amount. If entered as an annual dollar amount, a press of **Rcl** and **Shift Tax** converts to the monthly insurance amount or premium, and pressing **Tax** again converts to the annual percentage rate. If entered as a percentage, pressing **Tax** converts to the annual dollar amount, and pressing **Tax** once more shows the monthly insurance.

### Cash Flow Keys

The following keys provide quick and easy analysis of cash flow investment scenarios without all the confusing keys or keystrokes of typical financial calculators:

**Cash Flow**

This key allows the entry of up to 20 cash flows (either positive or negative; use the **Shift** **±** keys to label a cash flow as a negative value, or cash outlay).

**Shift Cash Flow**

**Frequency** — The second function of this key labels a cash flow that is repeated consecutively, or grouped (e.g., if a cash flow is repeated three times in a row, first enter the cash flow value into the **Cash Flow** key, then enter the frequency, or number of occurrences: **3 Shift Cash Flow**).

*Note: to use the Frequency function, a cash flow must repeat itself **consecutively**. If it occurs more than once out of order, or is not consecutive, you must enter it separately, just like other cash flows (do not use the Frequency function).*

**IRR**

**Internal Rate of Return** — This multi-function key calculates, upon consecutive presses:

(Cont'd)

(Cont'd)

---

Press	Display or Calculation
-------	------------------------

---

- |   |                                                         |
|---|---------------------------------------------------------|
| 1 | IRR%*                                                   |
| 2 | Net Present Value (NPV)**                               |
| 3 | Net Future Value (NFV)                                  |
| 4 | Desired Interest Rate (entered prior to calculating)*** |

\***IRR**: The rate of return at which the discounted future cash flows equal the initial cash outlay (C-0). An IRR greater than the desired rate of return is financially attractive (the higher, the better).

\*\***NPV**: Another tool to analyze cash flow scenarios. A positive NPV indicates that an investment is attractive (again, the higher, the better). NPV is computed by adding the initial investment (C-0), a negative cash outlay, to the present value of the estimated future cash flows.

\*\*\***Interest**: When in Canadian Mode, if an interest rate has been stored in the Interest function, the calculated Effective Interest percent will be used for calculating IRR if no desired rate of return is entered. If a desired rate of return is entered directly (e.g., **1 0 IRR**) the entered rate is used (it is not converted to the Effective Interest Rate Percentage).

**Note**: If there is no initial investment/cash outlay, enter "0" into the first cash flow register (C-0).

**Shift** **IRR**

**NPV/NFV**— If you wish to skip the IRR% calculation display (see above), press **Shift** **IRR** to calculate NPV. Second press calculates NFV.

**Shift** **6**

**Clear Cash Flows (Clear CF)**— Deletes all cash flows. Use this before you begin a new cash flow example.

---

### U.S. Keys (Used in U.S. Mode)

---

**Note**: Calculator must be set to U.S. Mode. See **page 11**.

**Shift** **Int**

**Annual Percentage Rate (APR)**— Calculates APR (for fixed-rate loans only) based on the entry of points and/or non-recurring loan fees paid at initiation. It also calculates total finance charges, monthly mortgage insurance, and PIMI payment, based on the entry of mortgage insurance via the **Shift** **9** keys.

**Shift** **9**

**U.S. Mortgage Insurance**— Used to enter Mortgage Insurance as percentage or dollar amount.

**Shift** **Pmt**

**Interest-Only Payment**— Enters or calculates interest-only payments.

**Shift** **Qual 1**

Used for interest-only qualifying (U.S. mode only).

**Shift** **Qual 2**

Used for interest-only qualifying (U.S. mode only).

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## CALCULATOR SETTINGS

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### Decimal Place Selection

---

With the **Shift** key, you have the option of selecting the number of decimal places you'd like to display. The values are rounded using conventional 5/4 rounding. You can do this prior to finding an answer or afterwards.

Press **Shift** followed by the number of decimal places you wish to display:

<b>Shift</b> <b>5</b>	<b>0.00000</b>
<b>Shift</b> <b>4</b>	<b>0.0000</b>
<b>Shift</b> <b>3</b>	<b>0.000</b>
<b>Shift</b> <b>2</b>	<b>0.00</b>
<b>Shift</b> <b>1</b>	<b>0.0</b>
<b>Shift</b> <b>0</b>	<b>0.</b>
<b>Shift</b> <b>□</b>	<b>floating point</b>

To return to the standard two decimal place setting, press **Shift** **2**.



## Canadian / U.S. Mode

---

Your calculator is factory-set to Canadian (Interest) Mode. If you need to calculate loan problems using U.S. interest, you must change the calculator to U.S. (Interest) Mode. To easily switch your calculator from Canadian Mode to U.S. Mode, press the **Shift** and then the **+** key.

Pressing **Shift** **+** also allows you to toggle between Canadian Interest and U.S. Interest calculations. In other words, you may switch from Canadian Interest to U.S. Interest, or vice versa, by repeating the keystrokes **Shift** **+**.

*Note: While converting to Canadian Interest Mode via **Shift** **+**, the letters "CDN" will appear and will also be displayed when the **Int** key is pressed. While converting to U.S. Mode, the letters "USA" will appear and will also be displayed when the **Int** key is pressed. If you're unsure what mode you're in, press **Rcl** **Int** to see if "CDN" or "USA" is displayed.*

**Canadian Mode** performs the following:

- Allows entry of Canadian interest rates.
- Enables Effective Interest Rate (Eff%) calculations.
- Disables selected U.S.-only functions (APR, Interest-Only Payments and U.S. Mortgage insurance).

**U.S. Mode** performs the following:

- Allows entry of U.S. interest rates.
- Enables selected U.S.-only functions (APR, Interest-Only Payments, Interest-Only Qualifying and U.S. Mortgage insurance).

## Preference Settings

Your calculator has a Preference Mode, which allows you to program the calculator to various settings. For example, it allows you to store certain values permanently, display certain values, or show values in a specific order.

To access the Preference Mode, press **Shift**, then **=**, then keep pressing **=** to toggle through the settings listed below. Press the **+** sign to advance through the sub-settings.

To return the calculator to its default, or factory-set Preference Settings, perform a Reset (see **page 70**).

After **Shift**,

Keep

Pressing

**=**: Display

Description

(Press **+** to Advance within each category):

- |   |                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                  |
|---|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------|
| 1 | <b><u>Decimal Places</u></b><br>- DEC HOLd EntrY — Permanently sets number of decimal places. (Default)<br>- DEC OFF 0.00 — Clears decimal place setting/resets to 0.00 at <b>Off</b> .                                                                                                                                                                                                         | Description<br>(Press <b>+</b> to Advance within each category): |
| 2 | <b><u>Payments Per Year</u></b><br>- P/Y OFF 12.00 — Resets to 12.00 at <b>Off</b> . (Default)<br>- P/Y HOLd EntrY — Permanently sets pmts/year.                                                                                                                                                                                                                                                |                                                                  |
| 3 | <b><u>Property Tax/Insurance (T/I)</u></b><br>- Clr OFF TAX INS — Clears all T/I (% and \$) values at <b>Off</b> . (Default)<br>- HOLd Pct. TAX INS — Holds only T/I percent (%) entries at <b>Off</b> .<br>- HOLd ALL TAX INS — Holds all T/I (% and \$) values at <b>Off</b> .<br>- Clr Clr TAX INS — Clears all T/I (% and \$) values at double press of <b>On/C</b> (or <b>On/C On/C</b> ). |                                                                  |

(Cont'd)

(Cont'd)

After **Shift**,  
Keep  
Pressing

**⊞**: Display

Description  
(Press **+** to Advance  
within each category):

- |   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|---|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 4 | <p><b><u>Mortgage Insurance (MI)—U.S. Only</u></b></p> <ul style="list-style-type: none"> <li>- Clr-Clr M Ins — Clears Mortgage Insurance (% and \$) upon <b>On/C On/C</b>. (Default)</li> <li>- Clr-OFF M Ins — Clears Mortgage Insurance (% and \$) at <b>Off</b>.</li> <li>- HOLd Pct. M Ins — Holds only percent (%) Mortgage Insurance entry at <b>Off</b>.</li> <li>- HOLd ALL M Ins — Holds (% or \$) Mortgage Insurance entry at <b>Off</b>.</li> </ul> |
| 5 | <p><b><u>Amortization/Single Entries</u></b></p> <ul style="list-style-type: none"> <li>- AMRT Ent-Ent — Displays Amortization for specified year only (e.g., enter <b>5 Amort</b> displays payments 49-60). (Default)</li> <li>- AMRT 1-Ent — Displays Amortization from beginning to specified year (e.g., enter <b>5 Amort</b> displays payments 1-60).</li> </ul>                                                                                           |
| 6 | <p><b><u>Display Qualifying Ratios</u></b></p> <ul style="list-style-type: none"> <li>- Q-R PrESS 1 — Displays ratio at beginning of sequence. (Default)</li> <li>- Q-R At End — Displays ratio at end of sequence.</li> </ul>                                                                                                                                                                                                                                  |
| 7 | <p><b><u>Beginning or End Mode</u></b></p> <ul style="list-style-type: none"> <li>- TYP End — End Mode. (Default)</li> <li>- TYP bEG — Beginning Mode.</li> </ul>                                                                                                                                                                                                                                                                                               |

## MEMORY

### Accumulative Memory

Whenever the **M+** key is pressed, the displayed value will be added to cumulative Memory. This value will remain in Memory until cleared or when the calculator is turned off.

Other Memory functions:

FUNCTION	KEYSTROKES
Recall total in Memory	<b>Rcl</b> <b>M+</b>
Display and clear Memory	<b>Rcl</b> <b>Rcl</b>
Subtract displayed value from Memory	<b>Shift</b> <b>M+</b>
Replace Memory with displayed value	<b>Shift</b> <b>Rcl</b> <b>M+</b>

The Memory is semi-permanent; that is, it will only be cleared when you:

- 1) turn off the calculator;
- 2) press **Rcl** **Rcl**; or
- 3) press **Shift** **X** (Clear All).

Examples:

STEPS	KEYSTROKES	DISPLAY
Store number into Memory	<b>3</b> <b>5</b> <b>5</b> <b>M+</b>	355.00 <b>M</b>
Add number to Memory	<b>2</b> <b>5</b> <b>5</b> <b>M+</b>	255.00 <b>M</b>
Recall total in Memory	<b>Rcl</b> <b>M+</b>	610.00 <b>M</b>
Subtract from Memory	<b>7</b> <b>4</b> <b>5</b> <b>Shift</b> <b>M+</b>	745.00 <b>M</b>
Recall total in Memory	<b>Rcl</b> <b>M+</b>	- 135.00 <b>M</b>
Replace Memory	<b>5</b> <b>0</b> <b>Shift</b> <b>Rcl</b> <b>M+</b>	50.00 <b>M</b>
Recall and clear Memory	<b>Rcl</b> <b>Rcl</b>	50.00

Store 55, recall, and multiply by 40. Then multiply it by 60.

STEPS	KEYSTROKES	DISPLAY
Clear	<b>On/C</b> <b>On/C</b>	0.00
Store 55	<b>5</b> <b>5</b> <b>M+</b>	55.00 <b>M</b>
Recall 55	<b>Rcl</b> <b>M+</b>	55.00 <b>M</b>
Multiply	<b>X</b> <b>4</b> <b>0</b> <b>=</b>	2,200.00 <b>M</b>
Recall 55	<b>Rcl</b> <b>M+</b>	55.00 <b>M</b>
Multiply	<b>X</b> <b>6</b> <b>0</b> <b>=</b>	3,300.00 <b>M</b>
Clear Memory	<b>Rcl</b> <b>Rcl</b>	55.00

**Memory Storage Keys (M0-M5)**

In addition to the standard cumulative Memory (as described on previous page), your calculator has six independent Storage Registers — **[M0]** through **[M5]** — that can be used to permanently store single, non-cumulative values. These values will be held when your calculator is turned off, and will only clear when a “Clear All” is performed (via **Shift** **⌫**).

You can replace a value in one of these Memory Registers by storing a new value in place of the stored value.

FUNCTION	KEYSTROKES
Store single value in M0	<b>Shift</b> <b>Rcl</b> <b>0</b>
Store single value in M1	<b>Shift</b> <b>Rcl</b> <b>1</b>
Store single value in M2-M5	<b>Shift</b> <b>Rcl</b> <b>2</b> , <b>3</b> , <b>4</b> , or <b>5</b>
Clear register (e.g., M1)	<b>0</b> <b>Shift</b> <b>Rcl</b> <b>1</b>
Review stored value (e.g., M1)	<b>Rcl</b> <b>1</b>
Clear stored values*	<b>Shift</b> <b>⌫</b>

*\*Perform a **Shift** **⌫** (Clear All) with caution, as it will clear any stored values from your calculator’s registers.*

*Example:*

*Store 175 into M1, recall the value, and store a new value in place of the first stored value. Then clear M1.*

KEYSTROKE	DISPLAY
<b>1</b> <b>7</b> <b>5</b> <b>Shift</b> <b>Rcl</b> <b>1</b>	M-1 175.00
<b>Off</b> <b>On/C</b>	0.00
<b>Rcl</b> <b>1</b>	M-1 175.00
<b>1</b> <b>5</b> <b>0</b> <b>Shift</b> <b>Rcl</b> <b>1</b>	M-1 150.00
<b>0</b> <b>Shift</b> <b>Rcl</b> <b>1</b>	M-1 0.00

### Additional Memory Storage Keys (M10-M19)

In addition to M0-M5 (as described previously), your calculator has ten additional independent Storage Registers — **[M10]** through **[M19]** — that can also be used to permanently store *single*, non-cumulative values. To access these storage registers, use the following keystrokes: **Shift** **Rcl** **◻** **[#]**, with **[#]** being digits **0** – **9**. These Storage Registers operate identically to M0-M5.

*Examples:*

*Store 250 into M10, recall the value, then clear M10.*

KEYSTROKE	DISPLAY
<b>2</b> <b>5</b> <b>0</b> <b>Shift</b> <b>Rcl</b> <b>◻</b> <b>0</b>	<b>M10 250.00</b>
<b>Off</b> <b>On/C</b>	<b>0.00</b>
<b>Rcl</b> <b>◻</b> <b>0</b>	<b>M10 250.00</b>
<b>0</b> <b>Shift</b> <b>Rcl</b> <b>◻</b> <b>0</b>	<b>M10 0.00</b>

*Store 350 into M11, recall the value, then clear M11.*

KEYSTROKE	DISPLAY
<b>3</b> <b>5</b> <b>0</b> <b>Shift</b> <b>Rcl</b> <b>◻</b> <b>1</b>	<b>M11 350.00</b>
<b>Off</b> <b>On/C</b>	<b>0.00</b>
<b>Rcl</b> <b>◻</b> <b>1</b>	<b>M11 350.00</b>
<b>0</b> <b>Shift</b> <b>Rcl</b> <b>◻</b> <b>1</b>	<b>M11 0.00</b>

*Note:* Repeat the above procedure for registers 12-19, using digits **2** – **9**.

*Note:* To clear all above values stored in Memory, press **Shift** **✕**. Use this with caution as **Shift** **✕** clears away any stored values from your calculator's register.

## BASIC ARITHMETIC EXAMPLES

### Arithmetic

This calculator uses standard chaining logic, which simply means that you enter your first value, the operator (+, −, ×, ÷), the second value and then the equals sign (=).

- A. 3 + 2 = 5.00  
B. 3 − 2 = 1.00  
C. 3 × 2 = 6.00  
D. 3 ÷ 2 = 1.50

### Percent Calculations

The percent (%) key can be used for finding a given percent of a number or for working add-on, discount or division percentage calculations.

- A. 800 × 25% = 200.00  
B. 250 + 10% = 275.00  
C. 25 − 50% = 12.50  
D. 200 ÷ 50% = 400.00

The Percent (%) key has special applications for real estate professionals — especially when figuring a commission amount.

### Percent Change

If a home's value increased from \$315,000 (Present Value) to \$350,000 (Future Value), what is the percent increase?

STEPS	KEYSTROKES	DISPLAY
Subtract appreciated value from the Present Value	3 5 0 000 − 3 1 5 000 =	35,000.00
Divide the difference by the Present Value	÷ 3 1 5 000 =	0.11
Calculate % increase	× 1 0 0 =	11.11 (or 11.1%)



### Figuring Straight Percent Commission

The commission for the listing office is 3%. If the property sells for \$157,900, what is the listing office's commission?

STEPS	KEYSTROKES	DISPLAY
Clear calculator	<b>On/C</b> <b>On/C</b>	0.00
Enter sales price	<b>1</b> <b>5</b> <b>7</b> <b>9</b> <b>0</b> <b>0</b>	157,900.
Multiply by commission %	<b>x</b> <b>3</b> <b>%</b> <b>=</b>	4,737.00

#### — DO NOT CLEAR CALCULATOR —

What if the listing agent works on a 50/50 split with his or her broker? What is the listing agent's share of this commission?

STEPS	KEYSTROKES	DISPLAY
Multiply by 50%	<b>x</b> <b>5</b> <b>0</b> <b>%</b> <b>=</b>	2,368.50

### Reduction in Listing Price (Discount %)

A nervous seller has had her property on the market for just over four months listed at \$175,500. Because she is anxious to move into a new home, she wishes to reduce the listing price by 5%. Calculate both the amount of reduction in dollars and the new, lowered listing price.

STEPS	KEYSTROKES	DISPLAY
Clear calculator	<b>On/C</b> <b>On/C</b>	0.00
Enter sales price	<b>1</b> <b>7</b> <b>5</b> <b>5</b> <b>0</b> <b>0</b>	175,500.
Subtract 5%	<b>-</b> <b>5</b> <b>%</b>	8,775.00
Find new listing price	<b>=</b>	166,725.00

### Simple, 1-Year Home Appreciation (Add-on %)

Properties in your area have been going up in value about 6% per year. If you purchase a \$198,000 home today, what would it be worth in one year, assuming the same rate of appreciation continues?

STEPS	KEYSTROKES	DISPLAY
Clear calculator	<b>On/C</b> <b>On/C</b>	0.00
Enter current value	<b>1</b> <b>9</b> <b>8</b> <b>000</b>	198,000.
Add 6%	<b>+</b> <b>6</b> <b>%</b>	11,880.00
Find appreciated value	<b>=</b>	209,880.00

*Note: See page 37 for another example of future value or appreciation.*

### Delta Percent - Rate of Appreciation

A home originally purchased for \$150,000 sold a year later for \$185,000. What is the rate of appreciation?

KEYSTROKES	DISPLAY
<b>1</b> <b>5</b> <b>0</b> <b>000</b> <b>Shift</b> <b>%</b>	150,000.00
<b>1</b> <b>8</b> <b>5</b> <b>000</b> <b>=</b>	23.33

### USING THE FEET AND METERS CONVERSIONS

Using the **m>ft** and **m²>ft²** keys, you can quickly convert Meters to Feet, Feet to Meters, Square Meters to Square Feet, and Square Feet to Square Meters.

Convert 5 meters to feet.

STEPS	KEYSTROKES	DISPLAY
Clear calculator	<b>On/C</b> <b>On/C</b>	0.00
Enter 5 Meters	<b>5</b>	5.
Convert to Feet	<b>m&gt;ft</b>	FEET 16.40

Convert 20 Feet to Meters.

STEPS	KEYSTROKES	DISPLAY
Clear calculator	<b>On/C</b> <b>On/C</b>	0.00
Enter 20 Feet	<b>2</b> <b>0</b>	20.
Convert to Meters	<b>Shift</b> <b>m&gt;ft</b>	MET 6.096

Convert 10 Square Meters to Square Feet.

STEPS	KEYSTROKES	DISPLAY
Clear calculator	<b>On/C</b> <b>On/C</b>	0.00
Enter 10 Square Meters	<b>1</b> <b>0</b>	10.
Convert to Square Feet	<b>m²&gt;ft²</b>	SQFT 107.64

Convert 20 Square Feet to Square Meters.

STEPS	KEYSTROKES	DISPLAY
Clear calculator	<b>On/C</b> <b>On/C</b>	0.00
Enter 20 Square Feet	<b>2</b> <b>0</b>	20.
Convert to Square Meters	<b>Shift</b> <b>m²&gt;ft²</b>	SQM 1.858

## USING THE DATE FUNCTION

Using the **DATE** key, you can quickly solve common real estate date problems: escrow or closing dates, listing expiration dates, and the number of days prepaid interest, etc. You enter a date as follows: Numerical Month **DATE**, Numerical Day **DATE**, and Numerical Year (MM **DATE** DD **DATE** YY).

The date function lets you: 1) add a number of days to a date to find a second date (in the future), 2) subtract a number of days from a date to find a second date (in the past), and, 3) subtract one date from another date to find the number of days in between.

For example, if a 45-day escrow begins September 19, 2007, what is the closing date and day?

STEPS	KEYSTROKES	DISPLAY
Clear calculator	<b>On/C</b> <b>On/C</b>	0.00
Enter month	<b>9</b> <b>DATE</b>	9.-
Enter day	<b>19</b> <b>DATE</b>	9-19-
Enter year	<b>07</b>	9-19-07
Add 45 days	<b>+</b> <b>45</b> <b>=</b>	SAT 11-03-07

Find the number of days to calculate prepaid interest due at closing, if the escrow closing date is 11/14/07 and the first payment is due 12/1/07.

STEPS	KEYSTROKES	DISPLAY
Clear calculator	<b>On/C</b> <b>On/C</b>	0.00
Enter 1st payment date	<b>12</b> <b>DATE</b> <b>01</b> <b>DATE</b> <b>07</b>	12-1-07
Subtract closing date to find number of days	<b>-</b> <b>11</b> <b>DATE</b> <b>14</b> <b>DATE</b> <b>07</b> <b>=</b>	17.00

## EXAMPLES — CANADIAN MODE

### MORTGAGE / TIME-VALUE-OF-MONEY (TVM)

1. The financial functions — Loan Amount, Payment, Interest, Term — work just like you would say them. For example, if you wanted to borrow \$100,000 for 25 years at 8% interest, just enter those three known variables and press the key for the unknown fourth variable:  
**Pmt**.
2. When calculating future value problems, enter the present value into the **Loan Amt** key.
3. Financial values may be entered in any order you want.
4. Entered values for Term and Interest are permanently stored in memory. (They do not clear when the calculator is turned off).
5. While in Canadian Mode (default), the calculator will display “CDN” in the upper left of the display when the **Int** key is pressed.
6. The calculator’s default setting is 12 payments per year, for monthly mortgages.
7. It is good practice to press **On/C** twice after completing a financial problem to ensure that you have cleared the previous **Loan Amt** and **Pmt** registers.
8. When solving for a financial component, the calculator may display the word “run” in the display. Solving for interest may take several seconds while the word “run” displays.
9. Once you have calculated an answer, for example, a payment, you can go back and change any financial variable and recalculate your new answer *without* re-entering all the other data. This is handy for demonstrating various “what-if” mortgage problems.
10. Successive presses of the **Pmt** key will calculate:
  - 1) the principal and interest (P&I) payment;
  - 2) the total payment (includes expenses).

(Cont'd)

(Cont'd)

**IMPORTANT NOTE:** All of the following examples can also be performed while the calculator is in U.S. Mode. See Canadian/U.S. Modes on **page 11**. Just be sure to change the term from 25 to 30 years, where applicable, and of course, the answers will change due to U.S. interest.

Additional U.S. examples are provided starting on **page 56**.

### Finding the Monthly Mortgage (P&I) Payment

Find the monthly payment on a 25-year fixed-rate mortgage of \$165,000 at 7.5% annual interest. What is the effective rate?

STEPS	KEYSTROKES	DISPLAY
Clear calculator	<b>On/C</b> <b>On/C</b>	0.00
Enter Mortgage amount	<b>1</b> <b>6</b> <b>5</b> <b>000</b> * <b>Loan Amt</b>	165,000.00
Enter Term in years	<b>2</b> <b>5</b> <b>Term</b>	25.00
Enter Interest	<b>7</b> <b>.</b> <b>5</b> <b>Int</b>	7.50
Find monthly P&I Payment	<b>Pmt</b>	"run" 1,207.07
Solve for effective rate	<b>Shift</b> <b>Int</b>	7.39

What is the new payment if the interest rate is lowered to 7%?

STEPS	KEYSTROKES	DISPLAY
Enter new Interest rate	<b>7</b> <b>Int</b>	7.00
Find monthly P&I Payment	<b>Pmt</b>	"run" 1,155.69

\*Note: Use the **000** key to save keystrokes.

### Finding the Term of a Mortgage

How long does it take to pay off a \$55,000 mortgage at 7.25% interest, if you make payments of \$750 each month?

STEPS	KEYSTROKES	DISPLAY
Clear calculator	<b>On/C</b> <b>On/C</b>	0.00
Enter Mortgage Amount	<b>5</b> <b>5</b> <b>000</b> <b>Loan Amt</b>	55,000.00
Enter Annual Interest Rate	<b>7</b> <b>.</b> <b>2</b> <b>5</b> <b>Int</b>	7.25
Enter monthly P&I Payment	<b>7</b> <b>5</b> <b>0</b> <b>Pmt</b>	750.00
Find Term in years	<b>Term</b>	"run" 8.05
Find periodic Term/Months	<b>Term</b>	96.65

### Paying Off a Mortgage Early (Making Larger Payments)

How long does it take to pay off a 25-year fixed-rate mortgage of \$150,000 at 7.25% interest if you add an extra \$200 to the mortgage payment each month?

STEPS	KEYSTROKES	DISPLAY
Clear calculator	<b>On/C</b> <b>On/C</b>	0.00
Enter Mortgage Amount	<b>1</b> <b>5</b> <b>0</b> <b>000</b> <b>Loan Amt</b>	150,000.00
Enter Annual Interest Rate	<b>7</b> <b>.</b> <b>2</b> <b>5</b> <b>Int</b>	7.25
Enter Term in years	<b>2</b> <b>5</b> <b>Term</b>	25.00
Find monthly P&I Payment	<b>Pmt</b>	“run” 1,073.88
Add add’l Payment amount	<b>+</b> <b>2</b> <b>0</b> <b>0</b> <b>=</b>	1,273.88
Enter as new P&I Payment	<b>Pmt</b>	1,273.88
Find reduced Mortgage Term	<b>Term</b>	“run” 16.95

### Finding the Nominal Rate

Find the nominal rate if the mortgage amount is \$98,500, term is 25 years and payment is \$765 a month.

STEPS	KEYSTROKES	DISPLAY
Clear calculator	<b>On/C</b> <b>On/C</b>	0.00
Enter Mortgage Amount	<b>9</b> <b>8</b> <b>5</b> <b>0</b> <b>0</b> <b>Loan Amt</b>	98,500.00
Enter Term	<b>2</b> <b>5</b> <b>Term</b>	25.00
Enter monthly P&I Payment	<b>7</b> <b>6</b> <b>5</b> <b>Pmt</b>	765.00
Find annual Interest rate	<b>Int</b> *	“run” 8.21
Find periodic Interest rate	<b>Int</b>	0.68

*\*Note: If desired, press **Shift** **+**, and press **Int**, and repeat to toggle between Canadian Mortgage Interest and U.S. Interest modes. Display will read “CDN” when calculating Canadian interest, and “USA” for U.S. rates.*

### Finding the Mortgage Amount

Approximately how much could you borrow if the interest rate was 7.8% on a 25-year mortgage, and you could afford \$1,500 in monthly payments? What if the interest rate was lowered to 7.5%?

STEPS	KEYSTROKES	DISPLAY
Clear calculator	<b>On/C</b> <b>On/C</b>	0.00
Enter Annual Interest Rate	<b>7</b> <b>.</b> <b>8</b> <b>Int</b>	7.80
Enter Term in Years	<b>2</b> <b>5</b> <b>Term</b>	25.00
Enter monthly P&I Payment	<b>1</b> <b>5</b> <b>0</b> <b>0</b> <b>Pmt</b>	1,500.00
Find Mortgage Amount	<b>Loan Amt</b>	“run” 199,869.55
Enter new Interest rate	<b>7</b> <b>.</b> <b>5</b>	7.50
Find new Mortgage Amount	<b>Loan Amt</b>	“run” 205,042.71

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## Non-Monthly Mortgages

Most mortgages are paid off monthly. However, if you have a non-monthly mortgage, you must change the number of payments per year using a two-key sequence: **Shift**  $\div$ . For example, here's how to set your calculator to four payments per year.

STEPS	KEYSTROKES	DISPLAY
Clear calculator	<b>On/C</b> <b>On/C</b>	0.00
Enter # of payments/year	<b>4</b> <b>Shift</b> $\div$	4.00

To recall the currently stored number of payments:

STEPS	KEYSTROKES	DISPLAY
Clear calculator	<b>On/C</b> <b>On/C</b>	0.00
Recall # of payments/year	<b>Rcl</b> $\div$	4.00

**IMPORTANT:** To return payments per year to the default value of 12, perform the following steps:

STEPS	KEYSTROKES	DISPLAY
Clear calculator	<b>On/C</b> <b>On/C</b>	0.00
Enter # of payments/year	<b>1</b> <b>2</b> <b>Shift</b> $\div$	12.00

## Finding a Quarterly Payment

Find the quarterly payment on a ten year mortgage of \$15,000 with an annual interest rate of 12%.

STEPS	KEYSTROKES	DISPLAY
Set to USA Mode	<b>Shift</b> <b>+</b>	INT USA
Clear calculator	<b>On/C</b> <b>On/C</b>	0.00
Set to four payments/year	<b>4</b> <b>Shift</b>	4.00
Enter Mortgage Amount	<b>1</b> <b>5</b> <b>000</b> <b>Loan Amt</b>	15,000.00
Enter Term in years	<b>1</b> <b>0</b> <b>Term</b>	10.00
Enter annual Interest rate	<b>1</b> <b>2</b> <b>Int</b>	12.00
Find quarterly P&I Payment	<b>Pmt</b>	"run" 644.36
Reset to 12 payments/year	<b>1</b> <b>2</b> <b>Shift</b>	"run" 12.00
Reset to Canadian Mode	<b>Shift</b> <b>+</b>	INT Cdn



## Bi-Weekly Mortgages

Your calculator includes a built-in Bi-Weekly mortgage function (**Shift** **Term**), which allows you to convert established, fully amortized monthly mortgages into Bi-Weeklies (in which one-half the monthly payment is made every two weeks). Because you make two extra half-payments per year (e.g., 26 Bi-Weekly payments is like making 13 payments/year), these kinds of mortgages can amount to large interest savings and a substantial reduction in the time it takes to pay them off.

You begin solving these problems by setting up the initial monthly mortgage and then pressing **Shift** **Term**. The first press of the **Term** displays the Bi-Weekly term. The second press of **Term** shows the total interest savings over the entire mortgage, a third press calculates the total interest paid, a fourth press shows the total principal paid, and a fifth press shows the total P&I payments. A press of **Pmt** will calculate the Bi-Weekly payment.

## Bi-Weekly Term Reduction and Payment

Find the monthly P&I payment on a 25-year, \$198,500 mortgage at 7.85% annual interest. Then convert it to a Bi-Weekly and find out how many years it will take to pay off this mortgage, the total interest savings, total payments and the Bi-Weekly payment.

STEPS	KEYSTROKES	DISPLAY
Clear calculator	<b>On/C</b> <b>On/C</b>	0.00
Enter Mortgage Amount	<b>1</b> <b>9</b> <b>8</b> <b>5</b> <b>0</b> <b>0</b> <b>Loan Amt</b>	198,500.00
Enter Term in years	<b>2</b> <b>5</b> <b>Term</b>	25.00
Enter annual Interest rate	<b>7</b> <b>.</b> <b>8</b> <b>5</b> <b>Int</b>	7.85
Find monthly P&I Payment	<b>Pmt</b>	"run" 1,496.02
Find Bi-Weekly Term	<b>Shift</b> <b>Term</b>	"run" 20.14
Find total Interest savings	<b>Term</b>	57,191.24
Find total Interest paid	<b>Term</b>	193,115.09
Find total principal	<b>Term</b>	198,500.00
Find total Payments	<b>Term</b>	391,615.09
Find Bi-Weekly Payment	<b>Pmt</b>	748.01
Exit Bi-Weekly Mode	<b>On/C</b> <b>On/C</b>	0.00

*Note: Canadian Mortgage insurance will be included in the Bi-Weekly calculations if it has been entered.*

### Sales Price / Down Payment

One of the unique features of this calculator is its ability to work with not only Mortgage Amount, but with Sales Price and Down Payment. You can enter two values to find the third (e.g., enter Price and Down Payment to find Mortgage Amount). You may also enter the down payment in both percent or dollar format. For example, to enter 20%, enter 20 and press the **Dn Pmt** key (you do not have to label it as a percent). Or enter \$20,000 (e.g., **2 0 000 Dn Pmt**).

*Note: A number under 100 entered as the Down Payment is assumed to be a percent.*

*Note: When using **Price**, **Dn Pmt**, and **Loan Amt** keys, it's recommended that you always enter the two known values (Price and Down Payment), then solve for the third (Mortgage **Loan Amt**), before calculating financial values.*

### Finding Mortgage Amount Based on Sales Price and Down Payment

Find both the down payment dollar amount and mortgage amount if the sales price is \$175,800 and you're planning to put 10% down.

STEPS	KEYSTROKES	DISPLAY
Clear calculator	<b>On/C On/C</b>	0.00
Enter sales Price	<b>1 7 5 8 0 0 Price</b>	175,800.00
Enter Down Payment %	<b>1 0 Dn Pmt</b>	10.00
Find Down Payment \$	<b>Dn Pmt</b>	17,580.00
Find Mortgage Amount	<b>Loan Amt</b>	158,220.00

### Finding Sales Price and Payment Based on Mortgage Amount and Down Payment

Find a home's sales price if you've been approved for a \$185,650, 25-year, 6.85% mortgage and you plan to put 15% down. Also find your monthly payment.

STEPS	KEYSTROKES	DISPLAY
Clear calculator	<b>On/C On/C</b>	0.00
Enter Mortgage Amount	<b>1 8 5 6 5 0 Loan Amt</b>	185,650.00
Enter Term	<b>2 5 Term</b>	25.00
Enter Interest	<b>6 . 8 5 Int</b>	6.85
Enter Down Payment %	<b>1 5 Dn Pmt</b>	15.00
Find Down Payment \$	<b>Dn Pmt</b>	32,761.76
Find sales Price	<b>Price</b>	218,411.76
Find monthly P&I Payment	<b>Pmt</b>	"run" 1,283.17

### Finding Loan-to-Value (LTV) Based on Down Payment and Sales Price

Find the Loan-to-Value if a buyer is putting \$15,000 down on a \$197,000 home. Then find the mortgage amount.

STEPS	KEYSTROKES	DISPLAY
Clear calculator	<b>On/C</b> <b>On/C</b>	0.00
Enter sales Price	<b>1</b> <b>9</b> <b>7</b> <b>000</b> <b>Price</b>	197,000.00
Enter Down Payment \$	<b>1</b> <b>5</b> <b>000</b> <b>Dn Pmt</b>	15,000.00
Find Down Payment %	<b>Dn Pmt</b>	7.61
Find LTV	<b>Dn Pmt</b>	92.39
Find Mortgage Amount	<b>Loan Amt</b>	182,000.00

### Setting Property Tax Percent Rate

Enter an annual property tax rate of 1.5%.

STEPS	KEYSTROKES	DISPLAY
Set Tax rate	<b>1</b> <b>.</b> <b>5</b> <b>Tax</b>	1.50
Clear display	<b>On/C</b> <b>On/C</b>	0.00
Recall Tax rate	<b>Rcl</b> <b>Tax</b>	1.50

### Setting Property Tax Dollar Amount

Enter annual property taxes estimated at \$2,500, then clear.

STEPS	KEYSTROKES	DISPLAY
Set annual Taxes	<b>2</b> <b>5</b> <b>0</b> <b>0</b> <b>Tax</b>	2,500.00
Clear Tax	<b>0</b> <b>Tax</b>	0.00

### Total Payment (Including Heating Expense)

Find the Total (PITH) payment on a 25-year, 7.63% mortgage if the home's selling price is \$178,000 and the down payment is 5%. Monthly heating cost is estimated at \$150.

STEPS	KEYSTROKES	DISPLAY
Clear calculator	<b>On/C</b> <b>On/C</b>	0.00
Enter Term in years	<b>2</b> <b>5</b> <b>Term</b>	25.00
Enter annual Interest	<b>7</b> <b>.</b> <b>6</b> <b>3</b> <b>Int</b>	7.63
Enter sales Price	<b>1</b> <b>7</b> <b>8</b> <b>000</b> <b>Price</b>	178,000.00
Enter Down Payment	<b>5</b> <b>Dn Pmt</b>	5.00
Add mo. heating Expense	<b>1</b> <b>5</b> <b>0</b> <b>Shift</b> <b>Debt</b>	150.00
Find Mortgage Amount	<b>Loan Amt</b>	169,100.00
Find P&I Payment	<b>Pmt</b>	"run" 1,250.90
Find Total (PITH) Payment	<b>Pmt</b>	1,400.90

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### Total Payment (Including Heating Expense and Property Tax – Entered as Percentage)

Find the Total (PITH) payment on a 25-year, 7.63% mortgage if the home's selling price is \$178,000 and the down payment is 5%. The annual property tax is estimated at 1.3% and the monthly heating cost is estimated at \$150.

STEPS	KEYSTROKES	DISPLAY
Clear calculator	<b>On/C On/C</b>	0.00
Enter Term in years	<b>2 5 Term</b>	25.00
Enter annual Interest	<b>7 . 6 3 Int</b>	7.63
Enter sales Price	<b>1 7 8 000 Price</b>	178,000.00
Enter Down Payment	<b>5 Dn Pmt</b>	5.00
Set annual Tax rate	<b>1 . 3 Tax</b>	1.30
Find annual property Taxes	<b>Tax</b>	2,314.00
Add mo. heating Expense	<b>1 5 0 Shift Debt</b>	150.00
Find Mortgage Amount	<b>Loan Amt</b>	169,100.00
Find P&I Payment	<b>Pmt</b>	"run" 1,250.90
Find Total Payment	<b>Pmt</b>	1,593.73

### Total Payment (Including Heating Expense and Property Tax – Entered as Dollar Amount)

Find the Total (PITH) payment on a 25-year, 7.25% mortgage if the home's selling price is \$227,000 and the down payment is 35%. Local annual property tax is estimated at \$2,270 (or 1% of the sales price). Monthly heating expense is \$100.

STEPS	KEYSTROKES	DISPLAY
Clear calculator	<b>On/C On/C</b>	0.00
Enter Term in years	<b>2 5 Term</b>	25.00
Enter annual Interest	<b>7 . 2 5 Int</b>	7.25
Enter sales Price	<b>2 2 7 000 Price</b>	227,000.00
Enter Down Payment %	<b>3 5 Dn Pmt</b>	35.00
Find dollar \$	<b>Dn Pmt</b>	79,450.00
Set Tax figure	<b>2 2 7 0 Tax *</b>	2,270.00
Add mo. heating Expense	<b>1 0 0 Shift Debt</b>	100.00
Find Mortgage Amount	<b>Loan Amt</b>	147,550.00
Find P&I Payment	<b>Pmt</b>	"run" 1,056.34
Find Total (PITH) Payment	<b>Pmt</b>	1,345.50

\*To view Tax rate in its monthly dollar amount and percent forms, press the Tax key three times —e.g., press **Rcl Tax Tax Tax** to recall the annual property tax, monthly property tax and percent (tax rate) of \$2,270, \$189.17 and 1.00%, respectively.

### **Finding Mortgage Amount (Including Canadian Mortgage Insurance)**

Find the Mortgage Amount (including Canadian Mortgage Insurance) on a 25-year mortgage at 7.8% interest if you are considering a mortgage with a monthly P&I Payment of \$1,500. Canadian Mortgage Insurance of 2.75% will be added to the mortgage amount.

STEPS	KEYSTROKES	DISPLAY
Clear calculator	<b>On/C</b> <b>On/C</b>	<b>0.00</b>
Enter annual Interest rate	<b>7</b> <b>▢</b> <b>8</b> <b>Int</b>	<b>7.80</b>
Enter Term in years	<b>2</b> <b>5</b> <b>Term</b>	<b>25.00</b>
Enter monthly P&I Payment	<b>1</b> <b>5</b> <b>0</b> <b>0</b> <b>Pmt</b>	<b>1,500.00</b>
Enter Canadian Mortgage Insurance	<b>2</b> <b>▢</b> <b>7</b> <b>5</b> <b>Cdn MI</b>	<b>2.75</b>
Find Mortgage Amount	<b>Loan Amt</b>	<b>199,869.55</b>
Find Mortgage Amount (including Canadian Mtg Ins)	<b>Loan Amt</b>	<b>205,365.97</b>
Enter new P&I Payment (including Canadian Mtg Ins)	<b>Pmt</b>	<b>1,541.25</b>

#### **— DO NOT CLEAR CALCULATOR —**

Recall entered Canadian Mtg Ins percentage	<b>Rcl</b> <b>Cdn MI</b>	<b>2.75</b>
Find Canadian Mtg Ins dollar amount	<b>Cdn MI</b>	<b>5,496.41</b>

### Finding Monthly Mortgage (P&I) Payment (Including Canadian Mortgage Insurance)

Find the monthly P&I Payment (including Canadian Mortgage Insurance) on a 25-year mortgage, 300,000 mortgage at 7.8% interest. Canadian Mortgage Insurance of \$5,250 will be added to the mortgage amount.

STEPS	KEYSTROKES	DISPLAY
Clear calculator	<b>On/C</b> <b>On/C</b>	0.00
Enter annual Interest rate	<b>7</b> <b>.</b> <b>8</b> <b>Int</b>	7.80
Enter Term in years	<b>2</b> <b>5</b> <b>Term</b>	25.00
Enter Canadian Mortgage Insurance	<b>5</b> <b>2</b> <b>5</b> <b>0</b> <b>Cdn MI</b>	5,250.00
Enter Mortgage Amount	<b>3</b> <b>0</b> <b>0</b> <b>000</b> <b>Loan Amt</b>	300,000.00
Find Mortgage Amount (including Canadian Mtg Ins)	<b>Loan Amt</b>	305,250.00
Find P&I Payment (including Canadian Mtg Ins)	<b>Pmt</b>	2,290.87

#### — DO NOT CLEAR CALCULATOR —

Recall entered Canadian Mtg Ins dollar amount	<b>Rcl</b> <b>Cdn MI</b>	5,250.00
Find Canadian Mtg Ins percentage	<b>Cdn MI</b>	1.75

*Note: Typically, Canadian Mortgage Insurance is entered as a percentage based on the LTV of a loan, but you may enter a percent or dollar amount into Canadian Mortgage Insurance order to calculate your Mortgage Amount and P&I/Total Payments.*

### Amortization and Remaining Balance

The amortization function is quick and simple. It allows you to find total interest, principal, and remaining balance for an entire mortgage, for an individual payment or individual year, or any range of payments or range of years, for fully or partially amortized mortgages.

#### Notes on Amortization

1. When you enter a range of payments using the Colon **:** key, you can find all three possible outputs — Interest, Principal and Remaining Balance — without having to re-enter the range each time. Simply keep pressing the **Amort** key to find the values.

(Cont'd)

(Cont'd)

2. You can also find Remaining Balance using the **Shift Amort** key by specifying a year or range of years, period or range of periods. For example, to find the remaining balance after the 10th year, press **1 0 Shift Amort**; to find the remaining balance after the 10th period, press **1 0 Shift ← Shift Amort**.
3. Entered ranges are inclusive, so that a range of 1 to 5 would include both year 1 and year 5.
4. Entering a numerical value or performing a math operation on the keyboard will alter the values (including the default settings) for range of payments calculations. It is therefore best to specify a range of payments or individual payment before you calculate any of the above.
5. In some cases, it is the practice to include a final, regular P&I payment with the “balloon payment.” This calculator will not include that in the internal calculation of remaining balance; it will only display the actual principal balance remaining.
6. If the first payment of a mortgage begins in a month other than January, you can set that month by using the Month Offset function. The default for this setting is 1 (for January). To change the start month, press the month number, then the **Shift** and **000** keys. This allows you to calculate the correct number of periods in the amortization range. For example, if the first payment of a mortgage begins in April, the value stored in the month offset would be 4 (**4 Shift 000**). If requesting amortization values for year one (**1 Amort**), the amortization of periods 1-9 would be displayed. Year two (**2 Amort**) would display values for periods 10-21. Turning your calculator off and back on returns the Month Offset to 1 (January).  
*Note: If you have changed your Month Offset, be sure to return it to 1 (e.g., **1 Shift 000**) before proceeding to the next problem.*
7. Your calculator automatically advances to the Next Amortization Range or Period after the initial sequence is complete, upon repeated presses of **Amort**. This saves you from entering the next range or period each time.



### Total Principal and Interest for a 25-Year Mortgage

How much total interest will you pay on a \$200,000 mortgage at 7.5% interest over 25 years? What is the total principal and interest paid?

STEPS	KEYSTROKES	DISPLAY
Clear calculator	<b>On/C</b> <b>On/C</b>	0.00
Enter Mortgage Amount	<b>2</b> <b>0</b> <b>0</b> <b>000</b> <b>Loan Amt</b>	200,000.00
Enter annual Interest rate	<b>7</b> <b>.</b> <b>5</b> <b>Int</b>	7.50
Enter Term in years	<b>2</b> <b>5</b> <b>Term</b>	25.00
Find monthly P&I Payment	<b>Pmt</b>	"run" 1,463.11
Find total # of payments	<b>Amort</b>	"run" 1-300
Find total interest paid	<b>Amort</b>	238,932.95
Find total principal paid	<b>Amort</b>	200,000.00
Find total principal/interest	<b>Amort</b>	438,932.95

### Total Principal and Interest (Including Canadian Mortgage Insurance)

How much total interest will you pay on a \$200,000 mortgage at 7.5% interest over 25 years with 5% down payment and 2.75% Canadian Mortgage Insurance included in the mortgage? What is the total principal and interest paid?

STEPS	KEYSTROKES	DISPLAY
Clear calculator	<b>On/C</b> <b>On/C</b>	0.00
Enter Mortgage Amount	<b>2</b> <b>0</b> <b>0</b> <b>000</b> <b>Loan Amt</b>	200,000.00
Enter annual Interest rate	<b>7</b> <b>.</b> <b>5</b> <b>Int</b>	7.50
Enter Term in years	<b>2</b> <b>5</b> <b>Term</b>	25.00
Enter Down Payment	<b>5</b> <b>Dn Pmt</b>	5.00
Enter Canadian Mortgage Insurance	<b>2</b> <b>.</b> <b>7</b> <b>5</b> <b>Cdn MI</b>	2.75
Find monthly P&I Payment (including Canadian Mtg Ins)	<b>Pmt</b>	1,503.35
Find total # of payments	<b>Amort</b>	"run" 1-300
Find total interest paid	<b>Amort</b>	245,503.61
Find total principal paid	<b>Amort</b>	205,500.00
Find total principal/interest	<b>Amort</b>	451,003.61

### **Amortization List for Individual Year(s) — Using “Next” Feature**

How much total interest and principal will you pay on a 25-year, \$90,000 mortgage at 8% interest during the first year? The second year? Third year, etc.? First, find monthly payment to “set-up” this mortgage. The calculator will automatically advance to the next year upon subsequent presses of **Amort**.

STEPS	KEYSTROKES	DISPLAY
Clear calculator	<b>On/C</b> <b>On/C</b>	0.00
Enter Mortgage Amount	<b>9</b> <b>0</b> <b>000</b> <b>Loan</b> <b>Amrt</b>	90,000.00
Enter Interest rate	<b>8</b> <b>Int</b>	8.00
Enter annual Term in years	<b>2</b> <b>5</b> <b>Term</b>	25.00
Find monthly P&I Payment	<b>Pmt</b>	“run” 686.89
Enter Year 1	<b>1</b> <b>Amort</b>	“run” 1-12
Find total interest in Year 1	<b>Amort</b>	7,040.09
Find total principal in Year 1	<b>Amort</b>	1,202.62
Find P&I in Year 1	<b>Amort</b>	8,242.71
Find remaining balance	<b>Amort</b>	88,797.38
Find remaining term	<b>Amort</b>	24.00
Display next year (Year 2)	<b>Amort</b>	“run” 13-24
Find total interest in Year 2	<b>Amort</b>	6,941.95
Find total principal in Year 2	<b>Amort</b>	1,300.75
Find P&I in Year 2	<b>Amort</b>	8,242.71
Find remaining balance	<b>Amort</b>	87,496.63
Find remaining term	<b>Amort</b>	23.00
Display next year (Year 3)	<b>Amort</b>	“run” 25-36

(etc. — sequence repeats for each year)

### Amortization List for Individual Year(s) — Using Month Offset

The first payment of a mortgage begins in May. How much total interest and principal will you pay on a 25-year, \$90,000 mortgage at 8% interest during the first year? The second year? Third year, etc.? (First find the monthly payment to “set-up” this mortgage.)

STEPS	KEYSTROKES	DISPLAY
Clear calculator	<b>On/C</b> <b>On/C</b>	0.00
Set Month Offset to May	<b>5</b> <b>Shift</b> <b>000</b>	5.00
Enter Mortgage Amount	<b>9</b> <b>0</b> <b>000</b> <b>Loan Amt</b>	90,000.00
Enter annual Interest rate	<b>8</b> <b>Int</b>	8.00
Enter Term in years	<b>2</b> <b>5</b> <b>Term</b>	25.00
Find monthly P&I Payment	<b>Pmt</b>	“run” 686.89
Enter Year 1	<b>1</b> <b>Amort</b>	“run” 1-8
Find total interest in Year 1	<b>Amort</b>	4,703.92
Find total principal in Year 1	<b>Amort</b>	791.22
Find P&I in Year 1	<b>Amort</b>	5,495.14
Find remaining balance	<b>Amort</b>	89,208.78
Find remaining term	<b>Amort</b>	24.33
Display next year (Year 2)	<b>Amort</b>	“run” 9-20

(etc. — sequence repeats for each year.)



























Return Month Offset to 1\* **1** **Shift** **000** 1.00

\*Note: Remember to reset Month Offset to 1. Check this setting by pressing **000**.

### Amortization List for Individual Payment(s)

For a \$175,000 mortgage at 6.85% interest for 25 years, find out how much interest and how much principal you'll pay in the first and second payments.











*Note:* Use the Per Function (Shift ) keys to specify payments.

STEPS	KEYSTROKES	DISPLAY
Clear calculator	 	0.00
Enter Mortgage Amount	    	175,000.00
Enter Interest	    	6.85
Enter Term	  	25.00
Find monthly P&I Payment		"run" 1,209.56
Enter Payment #1	   	"run" 1-1
Find interest in Payment #1		984.99
Find principal in Payment #1		224.57
Find P&I in Payment #1		1,209.56
Find Rem. Balance in Payment #1		174,775.43
Find Remaining Term in Payment #1		24.92
Display Payment #2		"run" 2-2

(etc. — sequence repeats for each payment.)

### — DO NOT CLEAR CALCULATOR —

For the same mortgage, find the amount of principal and interest paid in the 36th payment. Also, find the total payment, remaining balance and remaining term.

STEPS	KEYSTROKES	DISPLAY
Enter Payment #36	    	"run" 36-36
Find Interest in Pmt #36		936.25
Find Principal in Pmt #36		273.32
Find P&I Pmt #36		1,209.56*
Find Remaining Balance		166,065.90
Find Remaining Term		22.00

*\*Note:* Payments are rounded to the nearest whole cent; therefore, the penny difference.

### Amortization List for a Range of Payments or Years

For a \$225,000, 25-year mortgage at 7.4% interest, find out how much interest and principal you'll pay in payments 1-9, and then for years 1-10.

STEPS	KEYSTROKES	DISPLAY
Clear calculator	<b>On/C</b> <b>On/C</b>	0.00
Enter Mortgage Amount	<b>2</b> <b>2</b> <b>5</b> <b>000</b> <b>Loan Amt</b>	225,000.00
Enter annual Interest rate	<b>7</b> <b>.</b> <b>4</b> <b>Int</b>	7.40
Enter Term in years	<b>2</b> <b>5</b> <b>Term</b>	25.00
Find monthly P&I Payment	<b>Pmt</b>	"run" 1,631.89
Enter Payments #1-9	<b>1</b> <b>:</b> <b>9</b> <b>Shift</b> <b>←</b> <b>Amort</b>	"run" 1-9
Find interest paid	<b>Amort</b>	12,240.39
Find principal paid	<b>Amort</b>	2,446.63
Find P&I paid	<b>Amort</b>	14,687.01
Find remaining balance	<b>Amort</b>	222,553.37
Find remaining term	<b>Amort</b>	24.25
Enter Years #1-10	<b>1</b> <b>:</b> <b>1</b> <b>0</b> <b>Amort</b>	"run" 1-120
Find interest	<b>Amort</b>	149,169.59
Find principal	<b>Amort</b>	46,657.27
Find P&I paid	<b>Amort</b>	195,826.85
Find remaining balance	<b>Amort</b>	178,342.73
Find remaining term	<b>Amort</b>	15.00

### Balloon Payment / Remaining Balance Needed to Pay Off a Mortgage

You're looking at a new home with the following financing available: mortgage amount \$225,000 at 6.75% amortized over 25 years but due and payable after 10 years. What is the balloon payment (remaining balance) after 10 years?

STEPS	KEYSTROKES	DISPLAY
Clear calculator	<b>On/C</b> <b>On/C</b>	0.00
Enter Mortgage Amount	<b>2</b> <b>2</b> <b>5</b> <b>000</b> <b>Loan Amt</b>	225,000.00
Enter Interest rate	<b>6</b> <b>.</b> <b>7</b> <b>5</b> <b>Int</b>	6.75
Enter annual Term in years	<b>2</b> <b>5</b> <b>Term</b>	25.00
Find monthly P&I Payment	<b>Pmt</b>	"run" 1,541.36
Find balloon/remaining balance after 10 years	<b>1</b> <b>0</b> <b>Shift</b> <b>Amort</b>	"run" 175,202.35

## Future Value

Given any four components to a problem that includes a future value, you can calculate the fifth.

## Appreciation / Future Value

You purchased a home for \$250,000 and want to know what it will be worth in 3 years, figuring an inflation or appreciation rate of 6%. (Set periods to one per year.)

STEPS	KEYSTROKES	DISPLAY
Set to USA Mode	<b>Shift</b> <b>+</b>	INT USA
Clear calculator	<b>On/C</b> <b>On/C</b>	0.00
Set to 1 payment per year	<b>1</b> <b>Shift</b> <b>÷</b>	1.00
Enter present value	<b>2</b> <b>5</b> <b>0</b> <b>000</b> <b>Loan Amt</b>	250,000.00
Enter term in years	<b>3</b> <b>Term</b>	3.00
Enter appreciation rate	<b>6</b> <b>Int</b>	6.00
Find future value	<b>Shift</b> <b>Loan Amt</b>	“run” 297,754.00
Return to 12 Payments/year	<b>1</b> <b>2</b> <b>Shift</b> <b>÷</b>	12.00
Reset to Canadian Mode	<b>Shift</b> <b>+</b>	INT Cdn

## Basic Savings Account Problem (Future Value of an Initial Deposit)

What is the future value of an initial deposit of \$15,000 after 5 years, if interest is compounded monthly and the interest rate is 3%?

STEPS	KEYSTROKES	DISPLAY
Clear calculator	<b>On/C</b> <b>On/C</b>	0.00
Recall Payments/year*	<b>Rcl</b> <b>÷</b>	12.00
Enter savings deposit into Loan Amount (Present Value)	<b>1</b> <b>5</b> <b>000</b> <b>Loan Amt</b>	15,000.00
Enter Interest rate	<b>3</b> <b>Int</b>	3.00
Enter Term in years	<b>5</b> <b>Term</b>	5.00
Find Future Value	<b>Shift</b> <b>Loan Amt</b>	17,408.11

\*Calculator must be set to default of 12 periods per year, for compounding monthly. If it isn't, enter **1** **2** **Shift** **÷**.

### Trust Deeds and Discounted Notes

Your calculator easily handles trust deed purchase price and yield problems. Two things to remember are:

- 1) when entering or solving for “yield” or “rate of return,” use the **Int** key.
- 2) when entering or solving for “purchase price” or “present value,” use the **Loan Amt** key.

### Purchase Price of a Note — *Fully Amortized*

The mortgage you are thinking about buying has the following terms and conditions: 15 years remaining, \$100 per month incoming payments, and you want a 25% yield or return on your investment. In this case you are paying for the income stream — the incoming payments — and not the future value. What price should you pay, based on this desired yield?

STEPS	KEYSTROKES	DISPLAY
Clear calculator	<b>On/C</b> <b>On/C</b>	<b>0.00</b>
Enter desired yield	<b>2</b> <b>5</b> <b>Int</b>	<b>25.00</b>
Enter Term in years	<b>1</b> <b>5</b> <b>Term</b>	<b>15.00</b>
Enter Payment Amount	<b>1</b> <b>0</b> <b>0</b> <b>Pmt</b>	<b>100.00</b>
Find purchase price	<b>Loan Amt</b>	“run” <b>4,896.97</b>

#### — DO NOT CLEAR CALCULATOR —

What if you want a 30% yield? Leave all of the above data and re-enter the 30% interest over the old rate, then re-calculate the loan amount.

STEPS	KEYSTROKES	DISPLAY
Enter your new desired rate of return	<b>3</b> <b>0</b> <b>Int</b>	<b>30.00</b>
Find purchase price	<b>Loan Amt</b>	“run” <b>4,179.12</b>

### Finding the Yield on a Discounted Note

An individual wants to sell you a note under the following terms: 60 months remaining in the term, a face amount when due of \$7,500, 10% interest-only payments of \$62.50 (incoming). He says he will sell this note to you for \$6,500 if you buy today. If you buy it, what will be the yield on your investment?

STEPS	KEYSTROKES	DISPLAY
Clear calculator	<b>On/C</b> <b>On/C</b>	<b>0.00</b>
Enter future value of note when due	<b>7</b> <b>5</b> <b>0</b> <b>0</b> <b>Shift</b> <b>Loan Amt</b>	<b>7,500.00</b>
Enter purchase price	<b>6</b> <b>5</b> <b>0</b> <b>0</b> <b>Loan Amt</b>	<b>6,500.00</b>
Enter Remaining Term/Yrs.	<b>5</b> <b>Term</b>	<b>5.00</b>
Enter Payment Amount	<b>6</b> <b>2</b> <b>.</b> <b>5</b> <b>0</b> <b>Pmt</b>	<b>62.50</b>
Find your yield	<b>Int</b>	<b>"run" 14.09</b>

#### — DO NOT CLEAR CALCULATOR —

What should you pay for this trust deed if you want an 18% yield on your investment?

STEPS	KEYSTROKES	DISPLAY
Enter your desired yield	<b>1</b> <b>8</b> <b>Int</b>	<b>18.00</b>
Find purchase price	<b>Loan Amt</b>	<b>"run" 5,663.44</b>



## BUYER PRE-QUALIFYING

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The Qualifying keys on your calculator let you instantly pre-qualify prospective buyers. Mortgage lending pros will find these keys useful for doing instant mortgage pre-qualifications on the phone or in front of clients. Real estate agents/brokers can quickly pre-qualify clients so they can show them homes in their affordable price range.

The calculator gives you three types of qualifying answers:

- 1) Mortgage Amount Available given buyer's income and debt.
- 2) Income Required given mortgage amount (or price/down payment).
- 3) Actual Ratios given both income/debt and property data.

Here are some notes on qualifying using your calculator:

1. The **Qual 1** and **Qual 2** keys are multi-function, "smart" keys. In other words, they deliver a variety of answers based on what is input, and what is not. The calculator will figure out which qualifying solutions should be displayed, based on the qualifying variables you've input.
2. You can use both Qualifying keys **Qual 1** and **Qual 2** to demonstrate mortgage scenarios based on different qualifying ratios. The **Qual 1** key defaults to GDS:TDS Income and Debt Ratios of 32% and 40%. The **Qual 2** key defaults to GDS:TDS Ratios of 35% and 42%. However, you may store any ratios you want into these keys, or change the ratios at any time.
3. A calculated Qualifying Mortgage Amount is automatically stored in the Loan Amount **Loan Amt** register, replacing any existing Mortgage Amount value. This lets you instantly proceed to monthly payment calculations, etc.
4. When calculating Qualifying Mortgage Amount (based on entered buyer's data, term, interest and stored qualifying ratios), successive presses of the **Qual 1** or **Qual 2** keys give the following results:
  - the first press of **Qual 1** or **Qual 2** will display your stored ratios;
  - the second press in succession will display the "restricted," maximum qualifying mortgage amount (used in mortgage approval);
  - the third press in succession will show the buyer's actual income and debt ratios;
  - the fourth press will display the higher, "unrestricted" qualifying mortgage amount (for comparison purposes); \*and

(Cont'd)

(Cont'd)

- the last press will display the allowable monthly debt.

*Note:* You can set your Qualifying Ratios to display first or last via the Preference Settings. See **page 12**.

5. When calculating Annual Income Required (based on entered mortgage amount or sales price, term, interest and stored qualifying ratios), the first press of **Qual 1** or **Qual 2** will display your stored ratios, the second press in succession will display the Annual Income Required, and the third press in succession will show the Allowable Monthly Debt.
6. When calculating buyer's Actual Ratios based on entered borrower data (i.e., income and debt) and property data (e.g., mortgage amount, sales price), the first press of **Qual 1** or **Qual 2** will display the stored qualifying ratios, and the second press will calculate the buyer's actual ratios.
7. You may use the **Shift Debt (Exp)** and **Tax** keys as additional variables affecting buyer qualifying (and PITH payments). Property tax is calculated from the Sales Price.

*\*The Maximum Qualifying Loan Amount displayed is the "restricted" loan amount that the buyer may qualify for. This loan amount is based on whichever of the two ratios, income or debt, limits the buyer the most. If the buyer's maximum qualifying loan amount is restricted by their debt, then the unrestricted qualifying loan amount will also be displayed. The unrestricted qualifying loan amount is based purely on the buyer's income and is not restricted by their debt. If the maximum qualifying loan amount is restricted by their income, the unrestricted qualifying loan amount will not be displayed. This is useful to show clients what size loan they could qualify for if they paid off debt. Here, the calculator will display the loan amount with "UNR" (for unrestricted) and "INC" to indicate that it is based on income.*

### **IMPORTANT NOTE: U.S. versus Canadian Payment and Qualifying Calculations**

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It is important to note that U.S. and Canadian payment and pre-qualifying methods differ and are thus reflected in the examples in this User's Guide. In the U.S., property insurance ("Insurance") and mortgage insurance\* are included with property tax for the calculation of the "PITI" and total payment, and are also included as factors affecting Buyer Qualifying.

In Canada, Mortgage Insurance is typically added to the Mortgage Amount, affecting P&I and Total payments, Qualifying, and Amortization Schedules.

*\*In the U.S., mortgage insurance only applies if buyers have a low down payment (under 20%).*

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## QUALIFYING EXAMPLES

Most of the examples in this section will be based on the default GDS:TDS Income and Debt Ratios of 32% and 40%, respectively, which are stored in the **Qual 1** key.

### Recalling GDS / TDS Qualifying Ratios

Recall stored 32%-40% and 35%-42% ratios:

STEPS	KEYSTROKES	DISPLAY
Clear calculator	<b>On/C</b> <b>On/C</b>	<b>0.00</b>
Recall Qualifying Ratios 1	<b>Rcl</b> <b>Qual 1</b>	<b>32.00-40.00</b>
Recall Qualifying Ratios 2	<b>Rcl</b> <b>Qual 2</b>	<b>35.00-42.00</b>

### Storing New GDS / TDS Qualifying Ratios

Enter and permanently store new qualifying ratios of 30% for Income and 38% for Debt in **Qual 1**:

STEPS	KEYSTROKES	DISPLAY
Clear calculator	<b>On/C</b> <b>On/C</b>	<b>0.00</b>
Set Qualifying Ratios	<b>3</b> <b>0</b> <b>÷</b> <b>3</b> <b>8</b> <b>Qual 1</b>	<b>30.00-38.00</b>
Return ratios to 32:40*	<b>3</b> <b>2</b> <b>÷</b> <b>4</b> <b>0</b> <b>Qual 1</b>	<b>32.00-40.00</b>

*\*Note: Your ratios will be permanently stored, or will remain even after your calculator is turned off. You must re-enter these to restore your calculator to the default ratios of 32:40 and 35:42 if they have been changed.*

### Finding Qualifying Mortgage Amount and Sales Price (Simple Example Excluding Property Tax)

Given an interest rate of 7.5%, a term of 25 years, and the stored 32%:40% qualifying ratios, what size mortgage and what sales price can a buyer pre-qualify for, if he or she makes \$45,000 annually and has \$350 in long-term, monthly debt? The buyer plans to put \$10,000 down. Also, what is the monthly (P&I) payment? *(Based on no Tax.)*

STEPS	KEYSTROKES	DISPLAY
Clear calculator	<b>On/C</b> <b>On/C</b>	0.00
Enter Term in years	<b>2</b> <b>5</b> <b>Term</b>	25.00
Enter annual Interest rate	<b>7</b> <b>.</b> <b>5</b> <b>Int</b>	7.50
Clear Tax rate*	<b>0</b> <b>Tax</b>	0.00
Enter annual Income	<b>4</b> <b>5</b> <b>000</b> <b>Inc</b>	45,000.00
Enter monthly Debt	<b>3</b> <b>5</b> <b>0</b> <b>Debt</b>	350.00
Enter Down Payment	<b>1</b> <b>0</b> <b>000</b> <b>Dn Pmt</b>	10,000.00
Display Qualifying Ratios	<b>Qual 1</b>	32.00-40.00
Find pre-qualifying		
Mortgage Amount	<b>Qual 1</b>	“run” 157,199.41
Find Price	<b>Price</b>	167,199.41
Find monthly P&I Payment	<b>Pmt</b>	1,150.00

*\*Note: If you previously entered Property Tax, you must set this key to zero, as your calculator automatically stores the % rates semi-permanently (unless you set them to clear upon **On/C** **On/C** via the Preference Settings – see **page 12**).*

#### — DO NOT CLEAR CALCULATOR —

Re-qualify this buyer assuming lower debt (\$200/mo). *(Notice they now qualify for a larger mortgage and sales price.)*

STEPS	KEYSTROKES	DISPLAY
Enter new monthly Debt	<b>2</b> <b>0</b> <b>0</b> <b>Debt</b>	200.00
Display Qualifying Ratios	<b>Qual 1</b>	32.00-40.00
Find new pre-qualifying		
Mortgage Amount	<b>Qual 1</b>	“run” 164,034.17
Find new Price	<b>Price</b>	174,034.17
Find monthly P&I Payment	<b>Pmt</b>	1,200.00

### **Qualifying Mortgage Amount and Sales Price (Including Down Payment, Property Tax and Monthly Heating/Condo Fees)**

The same buyers as in the previous example (who make \$45,000 annually and have \$200 in long-term monthly debt) wish to buy a lower-priced condo, but can only afford \$7,500 down. If you include estimated annual property tax of 1.5% and other housing expenses of \$150 (\$100 for heating, \$50 for monthly condo fees), for what mortgage amount can they now pre-qualify? What sales price can they afford? What's their total (PITH) payment? *(Again, using previously stored 7.5% interest, 25-year term and qualifying ratios of 32%:40%; if you've cleared or changed these values, please re-enter them.)*

STEPS	KEYSTROKES	DISPLAY
Clear calculator	<b>On/C On/C</b>	0.00
Enter annual Income	<b>4 5 000 Inc</b>	45,000.00
Enter monthly Debt	<b>2 0 0 Debt</b>	200.00
Enter Down Payment	<b>7 5 0 0 Dn Pmt</b>	7,500.00
Enter property Tax rate	<b>1 . 5 Tax</b>	1.50
Enter housing Expense	<b>1 5 0 Shift Debt</b>	150.00
Recall Interest*	<b>Rcl Int</b>	7.50
Recall Term*	<b>Rcl Term</b>	25.00
Display Qualifying Ratios	<b>Qual 1</b>	32.00-40.00
Find pre-qualifying		
Mortgage Amount	<b>Qual 1</b>	"run" 121,489.58
Find Price	<b>Price</b>	128,989.58

#### **— DO NOT CLEAR CALCULATOR —**

Now find the monthly P&I payment (Principal & Interest) and Total (PITH) Payment:

STEPS	KEYSTROKES	DISPLAY
Find P&I Payment	<b>Pmt</b>	"run" 888.76
Find Total (PITH) Payment	<b>Pmt</b>	1,200.00

*\*Re-enter interest and term if you are not continuing from the previous example.*

### Qualifying Mortgage Amount and Sales Price (Including Canadian Mortgage Insurance)

Buyers who make \$45,000 annually and have \$200 in long-term monthly debt can put 15% down on a home. How much will they qualify for? What is the monthly payment (including the Canadian Mortgage Insurance of 1.75%)? (Using previously stored 7.5% interest, 25-year term, 1.5% tax rate, \$150 monthly heating expense, and qualifying ratios of 32%:40%).

STEPS	KEYSTROKES	DISPLAY
Clear calculator	<b>On/C On/C</b>	0.00
Enter annual Income	<b>4 5 000 Inc</b>	45,000.00
Enter monthly Debt	<b>2 0 0 Debt</b>	200.00
Enter Down Payment	<b>1 5 Dn Pmt</b>	15.00
Enter property Tax rate	<b>1 . 5 Tax</b>	1.50
Enter housing Expense	<b>1 5 0 Shift Debt</b>	150.00
Enter Canadian Mortgage Insurance	<b>1 . 7 5 Cdn MI</b>	1.75
Recall Interest*	<b>Rcl Int</b>	7.50
Recall Term*	<b>Rcl Term</b>	25.00
Display Qualifying Ratios	<b>Qual 1</b>	32.00-40.00
Find pre-qualifying Mortgage Amount (including Canadian Mortgage Insurance)	<b>Qual 1</b>	119,506.44

#### — DO NOT CLEAR CALCULATOR —

Now find the monthly P&I payment (Principal & Interest) and Total (PITH) Payment (including Canadian Mortgage Insurance):

STEPS	KEYSTROKES	DISPLAY
Find P&I Payment	<b>Pmt</b>	"run" 874.26
Find Total (PITH) Payment	<b>Pmt</b>	1,196.98

\*Re-enter interest and term if you are not continuing from the previous example.

### **“Restricted” Qualifying**

Buyers who make \$45,000 annually and have \$600 in long-term monthly debt wish to buy a home offered at \$165,000. They will put 15% down. Will they qualify? For what maximum mortgage amount can they qualify? (Use previously stored 7.5% interest and 25-year term, tax rate of 1.5%, monthly heating expense of \$100, and qualifying ratios of 32%:40%.)

*Note: If you aren't continuing from the previous problem, you'll need to re-enter interest, term, and property tax.*

STEPS	KEYSTROKES	DISPLAY
Clear calculator	<b>On/C On/C</b>	0.00
Enter annual Income	<b>4 5 000 Inc</b>	45,000.00
Enter monthly Debt	<b>6 0 0 Debt</b>	600.00
Enter mo. heating cost	<b>1 0 0 Shift Debt</b>	100.00
Recall Interest	<b>Rcl Int</b>	7.50
Recall Term	<b>Rcl Term</b>	25.00
Recall annual prop. Tax rate	<b>Rcl Tax</b>	1.50
Enter Down Payment	<b>1 5 Dn Pmt</b>	25.00
Display Qualifying Ratios	<b>Qual 1</b>	32.00-40.00
Find “restricted” Qualifying Mortgage Amount	<b>Qual 1</b>	“run” 91,052.53
Find sales Price	<b>Price</b>	107,120.62
Find \$ Down Payment	<b>Dn Pmt Dn Pmt</b>	16,068.09
Find total (PITH) Payment	<b>Pmt Pmt</b>	900.00

— DO NOT CLEAR CALCULATOR —

### **“Unrestricted” Qualifying**

The amount calculated in the previous example is the “restricted” mortgage they may qualify for, based on current income and debt. What are the buyer’s actual income and debt ratios? What is the “unrestricted” mortgage amount? What side is the “restricted” mortgage based on (income or debt)? What is the total allowable monthly debt?

STEPS	KEYSTROKES	DISPLAY
Find actual Ratios	<b>Qual 1 Qual 1 Qual 1</b>	<b>“run” 24.00-40.00</b>
Find “unrestricted” Mortgage Amount	<b>Qual 1</b>	<b>UNR 125,197.22 LA INC*</b>
Find maximum allowable Debt	<b>Qual 1</b>	<b>ALW 300.00 MO DEBT**</b>
Clear Tax register	<b>0 Tax</b>	<b>0.00</b>

*\*The “UNR” in the top of the display and “INC” in the lower right tells you this unrestricted Mortgage Amount is based on the buyer’s Income Ratio — therefore, the restricted Qualifying Mortgage Amount is based on the buyer’s Debt Ratio.*

*\*\*The restricted Qualifying Mortgage Amount is based on the ratio (income or debt) that limits the buyer the most — in this case it was debt. This means that if the buyer lowers their debt below the maximum allowable of \$300 a month, they would qualify for the larger “unrestricted” mortgage amount.*



### Qualifying Comparison (Comparing Two Different Mortgages or Two Qualifying Ratios at Once)

Given a buyer's annual income of \$45,000, \$150 in long-term monthly debt, a 10% down payment, monthly heating expense of \$75, an interest rate of 7.25% and term of 25 years, what mortgage amounts can they qualify for based on both 32%:40% and 35%:42% ratios? Also, find the corresponding total monthly payment for each. Estimate property taxes at 1.25%.

STEPS	KEYSTROKES	DISPLAY
Clear calculator	<b>On/C On/C</b>	0.00
Enter annual Income	<b>4 5 000 Inc</b>	45,000.00
Enter monthly Debt	<b>1 5 0 Debt</b>	150.00
Enter mo. heating Expense	<b>7 5 Shift Debt</b>	75.00
Enter Interest	<b>7 2 5 Int</b>	7.25
Enter Term	<b>2 5 Term</b>	25.00
Enter Down Payment %	<b>1 0 Dn Pmt</b>	10.00
Enter property Tax rate	<b>1 2 5 Tax</b>	1.25
Display Qual 1 stored Ratios	<b>Qual 1</b>	32.00-40.00
Find Qual 1 Qualifying Mortgage	<b>Qual 1</b>	"run" 135,271.72 150,301.91 968.44 1,200.00
Find Price	<b>Price</b>	
Find Qual 1 P&I Payment	<b>Pmt</b>	
Find Qual 1 Total Payment	<b>Pmt</b>	

— DO NOT CLEAR CALCULATOR —

STEPS	KEYSTROKES	DISPLAY
Display Qual 2 stored Ratios	<b>Qual 2</b>	35.00-42.00
Find Qual 2 Qualifying Mortgage	<b>Qual 2</b>	"run" 148,798.89 165,332.10 1,065.28 1,312.50
Find Price	<b>Price</b>	
Find Qual 2 P&I Payment	<b>Pmt</b>	
Find Qual 2 Total Payment	<b>Pmt</b>	

### **Finding Income Required and Allowable Monthly Debt**

Using the 32%:40% ratios, how much income would a buyer need to finance a \$180,000 home, if they put 35% down? What is the maximum allowable debt? What is the dollar down payment and mortgage amount? What is the monthly payment? Use 7.05% interest for 25 years. Estimate property tax rate at 1.5% and \$80 for monthly heating expense.

STEPS	KEYSTROKES	DISPLAY
Clear calculator	<b>On/C</b> <b>On/C</b>	0.00
Enter annual Interest rate	<b>7</b> <b>.</b> <b>0</b> <b>5</b> <b>Int</b>	7.05
Enter Term in years	<b>2</b> <b>5</b> <b>Term</b>	25.00
Enter Tax rate	<b>1</b> <b>.</b> <b>5</b> <b>Tax</b>	1.50
Enter mo. heating Expense	<b>8</b> <b>0</b> <b>Shift</b> <b>Debt</b>	80.00
Enter sales Price	<b>1</b> <b>8</b> <b>0</b> <b>000</b> <b>Price</b>	180,000.00
Enter Down Payment %	<b>3</b> <b>5</b> <b>Dn Pmt</b>	35.00
Find Down Payment \$	<b>Dn Pmt</b>	63,000.00
Find LTV	<b>Dn Pmt</b>	65.00
Find Mortgage Amount	<b>Loan Amt</b>	117,000.00
Display Qualifying Ratios	<b>Qual 1</b>	32.00-40.00
Find Income required	<b>Qual 1</b>	"run" 42,303.80
Find maximum allowable monthly Debt	<b>Qual 1</b>	"run" 282.03
Find P&I Payment	<b>Pmt</b>	823.10
Find Total Payment	<b>Pmt</b>	"run" 1,128.10

### **— DO NOT CLEAR CALCULATOR —**

The Canadian Mortgage Insurance for this mortgage is estimated at 0.50% based on an LTV of 65%. Find the Mortgage Amount, income required, allowable debt, and monthly payment for a mortgage that includes Canadian Mortgage Insurance.

STEPS	KEYSTROKES	DISPLAY
Enter Canadian Mortgage Insurance	<b>.</b> <b>5</b> <b>Cdn MI</b>	0.50
Find Mortgage Amount	<b>Loan Amt</b>	117,000.00
Find Mortgage Amount (including Canadian Mortgage Insurance)	<b>Loan Amt</b>	117,585.00
Display Qualifying Ratios	<b>Qual 1</b>	32.00-40.00
Find Income required	<b>Qual 1</b>	42,458.14
Find maximum allowable monthly Debt	<b>Qual 1</b>	283.05
Find P&I Payment (including Canadian Mortgage Insurance)	<b>Pmt</b>	827.22
Find Total Payment (including Canadian Mortgage Insurance)	<b>Pmt</b>	"run" 1,132.22

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### Solving for Actual Qualifying Ratios

A buyer who makes \$60,000 per year and has \$350 in long-term monthly debt wants to borrow \$100,000 to purchase a home. He has \$25,000 down payment and annual property tax is estimated at 1.4%. Monthly housing expenses are estimated at \$150. Use 7.5% interest for 25 years. What are his actual ratios? What is the price of the home he can afford? What is the monthly payment?

STEPS	KEYSTROKES	DISPLAY
Clear calculator	<b>On/C</b> <b>On/C</b>	0.00
Enter Interest rate	<b>7</b> <b>•</b> <b>5</b> <b>Int</b>	7.50
Enter Term in years	<b>2</b> <b>5</b> <b>Term</b>	25.00
Enter Mortgage Amount	<b>1</b> <b>0</b> <b>0</b> <b>000</b> <b>Loan Amt</b>	100,000.00
Enter annual Income	<b>6</b> <b>0</b> <b>000</b> <b>Inc</b>	60,000.00
Enter monthly Debt	<b>3</b> <b>5</b> <b>0</b> <b>Debt</b>	350.00
Enter Down Payment	<b>2</b> <b>5</b> <b>000</b> <b>Dn Pmt</b>	25,000.00
Find LTV	<b>Dn Pmt</b> <b>Dn Pmt</b>	80.00
Enter property Tax rate	<b>1</b> <b>•</b> <b>4</b> <b>Tax</b>	1.40
Enter mo. housing Expense	<b>1</b> <b>5</b> <b>0</b> <b>Shift</b> <b>Debt</b>	150.00
Display stored Ratios	<b>Qual 1</b>	32.00-40.00
Calculate actual Ratios	<b>Qual 1</b> "run"	20.55-27.55
Find sales Price	<b>Price</b>	125,000.00
Find P&I Payment	<b>Pmt</b>	731.55
Find Total Payment	<b>Pmt</b>	1,027.39

### — DO NOT CLEAR CALCULATOR —

The Canadian Mortgage Insurance for this mortgage is estimated at 1.00% based on an LTV of 80%. Find the actual ratios, Mortgage Amount, income required, and monthly payment for a mortgage that includes Canadian Mortgage Insurance.

STEPS	KEYSTROKES	DISPLAY
Enter Canadian Mortgage Insurance	<b>1</b> <b>Cdn MI</b>	1.00
Display stored ratios	<b>Qual 1</b>	32.00-40.00
Calculate actual ratios	<b>Qual 1</b>	20.55-27.55
Find Mortgage Amount	<b>Loan Amt</b>	100,000.00
Find Mortgage Amount (including Canadian Mortgage Insurance)	<b>Loan Amt</b>	101,000.00
Find P&I Payment	<b>Pmt</b>	738.87
Find Total Payment (including Canadian Mortgage Insurance)	<b>Pmt</b>	1,034.70

## CASH FLOW EXAMPLES

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Your calculator has easy-to-use cash flow keys for performing real estate investment, or cash flow analysis.

### Cash Flow Entry

The **Cash Flow** key can store up to 20 sequential, semi-permanent cash flows, including an Initial Investment, along with their corresponding Frequencies. The Cash Flow numbering begins at zero (C-0 is displayed) and ends at 19 (C-19 is displayed), for a total of 20 individual Cash Flows. The first Cash Flow (C-0) is the Initial Investment, and must be entered as a negative value to be identified as a cash outlay.

*Note: If there is no initial investment, enter zero for Cash Flow Zero (C-0).*

### Cash Flow Frequency

Each cash flow has a corresponding frequency to identify the number of consecutive occurrences for that Cash Flow (default is 1). Because the first Cash Flow is assumed to be the initial investment, the frequency remains at one and cannot be changed. Frequencies are numbered similar to Cash Flows (F-1 through F-19).

Frequencies are entered via **Shift** **Cash Flow**. When entering a Cash Flow, you can specify if the Cash Flow will occur multiple times for a consecutive period. For instance, if you expected to receive a payment for the same amount (e.g., \$500) for twelve months consecutively, you would enter your \$500 cash flow, and then enter in 12 for its frequency (i.e. number of consecutive occurrences).

### Delete/Modify Cash Flows

To delete all Cash Flows, press **Shift** **6**. This does not affect any other stored values or Preference Settings.

To modify an existing Cash Flow or Frequency, do the following:

- 1) First recall the Cash Flow or Frequency to be modified (e.g., **1** **Rcl** **Cash Flow** displays Cash Flow # 1),
- 2) Enter the new value to be stored in place of the recalled value,
- 3) Store the new value by using the Stor function:
  - a. **Shift** **Rcl** **Cash Flow** for storing a new cash flow value, or
  - b. **Shift** **Rcl** **Shift** **Cash Flow** for storing a new frequency.

### **IRR, NPV, and NFV Functions**

The **IRR** key is multifunctional, and consecutive presses calculate:

- the annual Internal Rate of Return (IRR%);
- the Net Present Value (NPV) of the entered cash flows, based on an entered desired Rate of Return, and the stored Payments per Year (*default = 12*);
- the Net Future Value; and
- (re-display of) the entered Rate of Return.

*Note: If you wish to skip directly to the NPV calculation, press **Shift** **IRR**.*

The desired Rate of Return is entered prior to performing the calculation (as shown in the following examples). If a desired Rate of Return is not entered prior to performing the IRR, NPV, and NFV calculations, then the Calculated Effective Rate is used as the desired Rate of Return (if an Interest Rate has been entered in **Int**).

See the following examples for entry of Cash Flows and Frequencies, and IRR, NPV, and NFV calculations.

*Note: The last example provides instructions on how to modify or recall Cash Flows and Frequencies.*

## Calculating IRR, NPV, and NFV for Annual Cash Flows

A real estate investor wishes to purchase/finance a piece of property for \$225,000. He'd like a return of 9% and expects to sell it after five years for \$275,000. He expects the annual cash flows listed below. Find the IRR, NPV and NFV, and determine whether this investment is desirable.

*Note: since payments are expected to be received **annually**, you will need to set your Payments per Year to 1.*

### Annual Cash Flow

Year 1	\$16,000
Year 2	\$16,600
Year 3	\$16,900
Year 4	\$17,200
Year 5	\$17,900 + \$275,000 (292,900)

STEPS	KEYSTROKES	DISPLAY
Clear cash flow register	<b>Shift</b> <b>6</b>	"CF Cleared" 0.00
Set payments per year to one	<b>1</b> <b>Shift</b> <b>÷</b>	1.00
Enter initial investment (as a negative entry indicating a Cash outlay)	<b>2</b> <b>2</b> <b>5</b> <b>000</b> <b>Shift</b> <b>—</b> <b>Cash Flow</b>	C-0 -225,000.00
Enter 1st cash flow value	<b>1</b> <b>6</b> <b>000</b> <b>Cash Flow</b>	C-1 16,000.00
Enter 2nd cash flow	<b>1</b> <b>6</b> <b>6</b> <b>0</b> <b>0</b> <b>Cash Flow</b>	C-2 16,600.00
Enter 3rd cash flow	<b>1</b> <b>6</b> <b>9</b> <b>0</b> <b>0</b> <b>Cash Flow</b>	C-3 16,900.00
Enter 4th cash flow	<b>1</b> <b>7</b> <b>2</b> <b>0</b> <b>0</b> <b>Cash Flow</b>	C-4 17,200.00
Add 5th Cash Flow to sale price	<b>1</b> <b>7</b> <b>9</b> <b>0</b> <b>0</b> <b>+</b> <b>2</b> <b>7</b> <b>5</b> <b>000</b> <b>=</b> <b>Cash Flow</b>	17,900.00 C-5 292,900.00
Find the IRR	<b>IRR</b>	"run" 11.04
Enter the desired rate of return and calculate NPV	<b>9</b> <b>Shift</b> <b>IRR</b>	"run" 19,250.50
Find the NFV	<b>IRR</b>	29,619.29
Re-display the desired rate of return	<b>IRR</b>	9.00%
Clear registers*	<b>Shift</b> <b>X</b>	"All Cleared" 0.00

\*This will clear Cash Flows and reset payments per year to 12 (monthly) for performing the other examples in this guide.

**Analysis:** This investment would provide an internal rate of return greater than the desired rate of return, making this a positive investment.

### Calculating IRR, NPV, and NFV for Monthly Cash Flows

A real estate investor wishes to purchase/finance a piece of property for \$225,000. She'd like a return of 10% and expects to sell it after five years for \$275,000. She expects the monthly cash flows below. Find the IRR, NPV and NFV, and determine whether this investment is desirable.

*Note: since payments are expected to be received **monthly**, you will need to set your Payments per Year to 12.*

Monthly Cash Flows		
Year 1	\$1,000	
Year 2	\$1,100	
Year 3*	\$1,200	
Year 4*	\$1,200	
Year 5	\$275,000	
STEPS	KEYSTROKES	DISPLAY
Clear cash flow register	<b>Shift</b> <b>6</b>	"CF Cleared" 0.00
Enter payments per year	<b>1</b> <b>2</b> <b>Shift</b> <b>÷</b>	12.00
Enter initial investment (as a negative entry indicating a cash outlay)	<b>2</b> <b>2</b> <b>5</b> <b>000</b> <b>Shift</b> <b>—</b> <b>Cash Flow</b>	C-0 -225,000.00
Enter 1st cash flow value	<b>1</b> <b>000</b> <b>Cash Flow</b>	C-1 1,000.00
Enter 1st cash flow frequency	<b>1</b> <b>2</b> <b>Shift</b> <b>Cash Flow</b>	F-1 12.00
Enter 2nd cash flow value	<b>1</b> <b>1</b> <b>0</b> <b>0</b> <b>Cash Flow</b>	C-2 1,100.00
Enter 2nd cash flow frequency	<b>1</b> <b>2</b> <b>Shift</b> <b>Cash Flow</b>	F-2 12.00
Enter 3rd cash flow value	<b>1</b> <b>2</b> <b>0</b> <b>0</b> <b>Cash Flow</b>	C-3 1,200.00
Enter 3rd cash flow frequency*	<b>2</b> <b>4</b> <b>Shift</b> <b>Cash Flow</b>	F-3 24.00
Enter final (4th) cash flow	<b>2</b> <b>7</b> <b>5</b> <b>000</b> <b>Cash Flow</b>	C-4 275,000.00
Find the IRR	<b>IRR</b>	"run" 10.26%
Enter the desired rate of return and calculate NPV	<b>1</b> <b>0</b> <b>Shift</b> <b>IRR</b>	"run" 2,127.07
Find the NFV	<b>IRR</b>	3,194.37
Re-display the desired rate of return	<b>IRR</b>	10.00%

\*Because the amount of monthly rent for Years 3 and 4 remains the same, this Cash Flow amount is entered once (C-3), and the frequency for this Cash Flow is set to 24, indicating that this amount is received for two years, or 24 total payments.

**Analysis:** This investment would bring an internal rate of return of 10.26%. The NPV is over \$2,000, resulting in a positive return on investment.

— DO NOT CLEAR CASH FLOWS —

(Cont'd)

(Cont'd)

### Recalling and Replacing Cash Flows

STEPS	KEYSTROKES	DISPLAY
1) Recall all cash flows and frequencies:		
Initial cash flow	<b>Rcl</b> <b>Cash Flow</b>	C-0 -225,000.00
1st cash flow	<b>Cash Flow</b>	C-1 1,000.00
1st cash flow frequency	<b>Cash Flow</b>	F-1 12.00
2nd cash flow	<b>Cash Flow</b>	C-2 1,100.00
2nd cash flow frequency	<b>Cash Flow</b>	F-2 12.00
3rd cash flow	<b>Cash Flow</b>	C-3 1,200.00
3rd cash flow frequency	<b>Cash Flow</b>	F-3 24.00
4th cash flow	<b>Cash Flow</b>	C-4 275,000.00
4th cash flow frequency	<b>Cash Flow</b>	F-4 1.00
2) Recall a specific cash flow (in this example, the first cash flow):		
Recall 1st cash flow	<b>1</b> <b>Rcl</b> <b>Cash Flow</b>	C-1 1,000.00
3) Recall and replace a specific cash flow (in this case, the second cash flow):		
Recall 2nd cash flow	<b>2</b> <b>Rcl</b> <b>Cash Flow</b>	C-2 1,100.00
Replace with new cash flow value of \$1,150	<b>1</b> <b>1</b> <b>5</b> <b>0</b> <b>Shift</b> <b>Rcl</b> * <b>Cash Flow</b>	C-2 1,150.00

— DO NOT CLEAR CASH FLOWS —

### Recalling and Replacing Cash Flow Frequencies

STEPS	KEYSTROKES	DISPLAY
1) Recall the first frequency:	<b>Rcl</b> <b>Shift</b> <b>Cash Flow</b>	F-1 12.00
2) Or, recall a specific frequency (in this example, the second cash flow frequency):	<b>2</b> <b>Rcl</b> <b>Shift</b> <b>Cash Flow</b>	F-2 12.00
3) Recall and replace frequency of a cash flow:		
a) Recall 1st frequency	<b>1</b> <b>Rcl</b> <b>Shift</b> <b>Cash Flow</b>	F-1 12.00
b) Replace frequency of 12 with a frequency of 6 (e.g., six months)	<b>6</b> <b>Shift</b> <b>Rcl</b> * <b>Shift</b> <b>Cash Flow</b>	F-1 6.00

\*To modify an existing cash flow or frequency, first recall the cash flow or frequency to be modified (e.g., **1** **Rcl** **Cash Flow** displays cash flow # 1), enter the new value to be stored in place of the recalled value, and then store the new value by using the Stor function (**Shift** **Rcl** **Cash Flow** for storing a new cash flow value, or **Shift** **Rcl** **Shift** **Cash Flow** for storing a new frequency).

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## EXAMPLES — U.S. MODE

### Finding the Monthly Mortgage Payment (Based on U.S. Interest Rate)

**IMPORTANT NOTE:** Your calculator must be in U.S. Mode to complete the following examples. If it isn't, press **Shift** **+**. Also, when returning to Canadian examples, be sure to return to Canadian Mode by pressing **Shift** **+** again.

Find the monthly payment on a 30-year mortgage of \$215,000 at 7.5% annual U.S. interest.

STEPS	KEYSTROKES	DISPLAY
Clear calculator	<b>On/C</b> <b>On/C</b>	0.00
Enter Mortgage Amount	<b>2</b> <b>1</b> <b>5</b> <b>000</b> <b>Loan Amt</b>	215,000.00
Enter Term in years	<b>3</b> <b>0</b> <b>Term</b>	30.00
Enter annual Interest rate	<b>7</b> <b>.</b> <b>5</b> <b>Int</b>	7.50
Find monthly P&I Payment	<b>Pmt</b>	"run" 1,503.31

### Finding the Interest-Only Payment

Find the interest-only payment on a loan of \$15,000 at 9% interest.

STEPS	KEYSTROKES	DISPLAY
Clear	<b>On/C</b> <b>On/C</b>	0.00
Enter Loan	<b>1</b> <b>5</b> <b>000</b> <b>Loan Amt</b>	15,000.00
Enter Interest	<b>9</b> <b>Int</b>	7.00
Find payment	<b>Shift</b> <b>Pmt</b> *	112.50

\*The fourth press of the **Pmt** key also calculates the inter-only payment if you have a Term entered, but you may use the above keystrokes as a shortcut.

### Interest-Only Payment (Entry)

How much can you borrow if the interest rate is 7% on a 30-year interest-only mortgage and you can afford to pay \$1,000 each month?

STEPS	KEYSTROKES	DISPLAY
Clear	<b>On/C</b> <b>On/C</b>	0.00
Enter Interest	<b>7</b> <b>Int</b>	7.00
Enter Payment	<b>1</b> <b>000</b> <b>Shift</b> <b>Pmt</b>	1000.00
Find Loan	<b>Loan Amt</b>	171,428.57

## Property Taxes, Property / Hazard Insurance and Monthly Housing Expense

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Your calculator has keys that store estimated local annual Property Tax, Property Insurance and Mortgage Insurance (if applicable), and monthly estimated housing expense. This allows you to calculate the PITI (Principal, Interest, Tax and Insurance) payment and Total Payment (PITI plus Monthly Expenses), in addition to the regular P&I payment.

*Note:* As an optional step, you may also enter monthly expenses, such as utilities, maintenance or homeowner's association dues, into the **Shift Debt** location.

Entered Property Tax and Insurance values are semi-permanent. This means that they do not clear upon pressing the **On/C** key, but are deleted when you turn the calculator off. You can use the Preference Settings (**Shift** **=**), however, to set the calculator to hold Tax and Insurance (% and \$) values when the calculator is turned off (see **page 12**).

*Note:* There's a separate Preference Setting for Mortgage Insurance.

Tax and insurance can be entered as dollar amounts or percentages. If entered as percentages, the Sales Price or Mortgage Amount can be changed and tax and insurance will be recalculated automatically. If entered as dollar amounts, however, they will need to be re-entered for a change in Sales Price or Mortgage Amount to be correct. Entered values less than ten are assumed to be annual % rates.

***IMPORTANT NOTE:*** Property Tax and Property Insurance rates are based on the Sales Price (therefore, a Down Payment or Sales Price should be entered). The Mortgage Insurance rate is based on the Mortgage/Loan Amount. If neither Sales Price nor Down Payment has been entered, the Sales Price is defaulted to equal the Loan Amount (basically assuming a 100% mortgage), in which case the Tax and Insurance rates will be based on the Loan Amount value entered.

### PITI Payment (Tax and Insurance Entered as Percentage)

Find the PITI payment on a 30-year, 8.4% loan if the home's selling price is \$125,000 and the down payment is 5%. Annual property taxes are estimated at 1.3%, annual property insurance at 0.25% and annual mortgage insurance at 0.45%.

STEPS	KEYSTROKES	DISPLAY
Clear calculator	<b>On/C</b> <b>On/C</b>	0.00
Enter Term in years	<b>3</b> <b>0</b> <b>Term</b>	30.00
Enter annual Interest rate	<b>8</b> <b>.</b> <b>4</b> <b>Int</b>	8.40
Enter sales Price	<b>1</b> <b>2</b> <b>5</b> <b>000</b> <b>Price</b>	125,000.00
Enter Down Payment	<b>5</b> <b>Dn Pmt</b>	5.00
Set Tax rate	<b>1</b> <b>.</b> <b>3</b> <b>Tax</b>	1.30
Set property Insurance rate	<b>.</b> <b>2</b> <b>5</b> <b>Shift</b> <b>Tax</b>	0.25
Set Mortgage Insurance rate	<b>.</b> <b>4</b> <b>5</b> <b>Shift</b> <b>9</b>	0.45
Find mortgage Amount	<b>Loan Amt</b>	118,750.00
Find monthly P&I Payment	<b>Pmt</b>	"run" 904.68
Find monthly PITI Payment	<b>Pmt</b>	1,110.67

### PITI Payment (Tax and Insurance Entered as Dollar Amount)

Find the PITI payment on a 30-year, 7.25% loan if the home's selling price is \$311,000 and the down payment is 20%. Local annual property taxes are estimated at \$5,900 and property insurance at \$370.

*Note: PMI or mortgage insurance is not included in this case, as the down payment is 20%.*

STEPS	KEYSTROKES	DISPLAY
Clear calculator	<b>On/C</b> <b>On/C</b>	0.00
Enter Term in years	<b>3</b> <b>0</b> <b>Term</b>	30.00
Enter annual Interest	<b>7</b> <b>.</b> <b>2</b> <b>5</b> <b>Int</b>	7.25
Enter sales Price	<b>3</b> <b>1</b> <b>1</b> <b>000</b> <b>Price</b>	311,000.00
Enter Down Payment %	<b>2</b> <b>0</b> <b>Dn Pmt</b>	20.00
Find dollar \$	<b>Dn Pmt</b>	62,200.00
Set Tax figure	<b>5</b> <b>9</b> <b>0</b> <b>0</b> <b>Tax</b> *	5,900.00
Set Insurance figure	<b>3</b> <b>7</b> <b>0</b> <b>Shift</b> <b>Tax</b>	370.00
Set Mortgage Ins. to zero	<b>0</b> <b>Shift</b> <b>9</b>	0.00
Find Loan Amount	<b>Loan Amt</b>	248,800.00
Find P&I Payment	<b>Pmt</b>	"run" 1,697.25
Find PITI Payment	<b>Pmt</b>	2,219.75

*\*Note: To view Tax/Insurance rates in their monthly and percent forms, press the **Tax** or **Ins** key three times — e.g., press **Rcl** **Tax** **Tax** **Tax** to recall the annual property tax, monthly property tax and % tax rate of \$5,900, \$491.67 and 1.9%, respectively.*

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### Calculating Tax and Insurance Percent or Dollar Amount

If loan variables are entered in addition to tax and insurance percent rates or dollar values, the respective Tax/Insurance dollar values or percent rates can be viewed by simply pressing the applicable keys a second time. For example, enter an annual property tax rate of 1.5%, a property insurance rate of 0.25% and a mortgage insurance rate of 0.75%. Then enter a sales price of \$250,000, 25% down, a term of 30 years and an interest rate of 8%. Calculate the loan, monthly payments and annual tax and insurance dollar amounts, or premiums.

STEPS	KEYSTROKES	DISPLAY
Clear calculator	<b>On/C</b> <b>On/C</b>	0.00
Set Property Tax rate	<b>1</b> <b>.</b> <b>5</b> <b>Tax</b>	1.50
Set Insurance rate	<b>.</b> <b>2</b> <b>5</b> <b>Shift</b> <b>Tax</b>	0.25
Set Mortgage Ins. rate	<b>.</b> <b>7</b> <b>5</b> <b>Shift</b> <b>9</b>	0.75
Enter Price	<b>2</b> <b>5</b> <b>0</b> <b>000</b> <b>Price</b>	250,000.00
Enter Down Payment %	<b>2</b> <b>5</b> <b>On Pmt</b>	25.00
Enter Term in years	<b>3</b> <b>0</b> <b>Term</b>	30.00
Enter annual Interest rate	<b>8</b> <b>Int</b>	8.00
Find Mortgage Amount	<b>Loan Amt</b>	187,500.00
Recall property Tax %	<b>Rcl</b> <b>Tax</b>	1.50
Calculate property Tax \$	<b>Tax</b>	3,750.00
Recall property Ins. %	<b>Rcl</b> <b>Shift</b> <b>Tax</b>	0.25
Calculate property Ins. \$	<b>Shift</b> <b>Tax</b>	625.00
Recall Mortgage Ins. %	<b>Rcl</b> <b>Shift</b> <b>9</b>	0.75
Calculate Mortgage Ins. \$	<b>Shift</b> <b>9</b>	1,406.25
Find monthly P&I Payment	<b>Pmt</b>	"run" 1,375.81
Find monthly PITI Payment	<b>Pmt</b>	"run" 1,857.58

*Note: The same procedure can be performed to find the opposite — that is, find the respective % rates based on entered annual dollar amounts or insurance premiums. Simply enter the dollar amounts and mortgage variables first, and the second press of the respective key will calculate the percent rate.*

### Finding the Interest Rate

Find the interest rate if the mortgage is \$98,500, term is 30 years and payment is \$1,150 a month.

STEPS	KEYSTROKES	DISPLAY
Clear calculator	<b>On/C</b> <b>On/C</b>	0.00
Enter Loan Amount	<b>9</b> <b>8</b> <b>5</b> <b>0</b> <b>0</b> <b>Loan Amt</b>	98,500.00
Enter Term in years	<b>3</b> <b>0</b> <b>Term</b>	30.00
Enter monthly P&I Payment	<b>1</b> <b>1</b> <b>5</b> <b>0</b> <b>Pmt</b>	1,150.00
Find annual Interest	<b>Int</b>	"run" 13.78
Find periodic Interest	<b>Int</b>	1.15

### Finding the Term of a Loan

How long does it take to pay off a \$15,000 loan at 10% interest if you make payments of \$200 each month?

STEPS	KEYSTROKES	DISPLAY
Clear calculator	<b>On/C</b> <b>On/C</b>	0.00
Enter Loan Amount	<b>1</b> <b>5</b> <b>000</b> <b>Loan Amt</b>	15,000.00
Enter annual Interest rate	<b>1</b> <b>0</b> <b>Int</b>	10.00
Enter monthly Payment	<b>2</b> <b>0</b> <b>0</b> <b>Pmt</b>	200.00
Find Term in years	<b>Term</b>	"run" 9.85
Find periodic Term	<b>Term</b>	118.19

### Finding the Loan Amount

Approximately how much could you borrow if the interest rate was 7.8% on a 30-year mortgage and you could afford \$1,500 in monthly payments? What if the interest rate was lowered to 7.5%?

STEPS	KEYSTROKES	DISPLAY
Clear calculator	<b>On/C</b> <b>On/C</b>	0.00
Enter annual Interest rate	<b>7</b> <b>8</b> <b>Int</b>	7.80
Enter Term in years	<b>3</b> <b>0</b> <b>Term</b>	30.00
Enter monthly P&I Payment	<b>1</b> <b>5</b> <b>0</b> <b>0</b> <b>Pmt</b>	1,500.00
Find Loan Amount	<b>Loan Amt</b>	"run" 208,370.81
Enter new Interest rate	<b>7</b> <b>5</b> <b>Int</b>	7.50
Find new Loan Amount	<b>Loan Amt</b>	"run" 214,526.44

### Finding Sales Price and Payment Based on Loan Amount and Down Payment

Find a home's sales price if you've been approved for a \$200,000, 30-year, 7.5% mortgage and you plan to put 20% down. Also find your monthly payment.

STEPS	KEYSTROKES	DISPLAY
Clear calculator	<b>On/C</b> <b>On/C</b>	0.00
Enter Loan Amount	<b>2</b> <b>0</b> <b>0</b> <b>000</b> <b>Loan Amt</b>	200,000.00
Enter Term in years	<b>3</b> <b>0</b> <b>Term</b>	30.00
Enter annual Interest rate	<b>7</b> <b>.</b> <b>5</b> <b>Int</b>	7.50
Enter Down Payment %	<b>2</b> <b>0</b> <b>Down Pmt</b>	20.00
Find sales Price	<b>Price</b>	250,000.00
Find monthly P&I Payment	<b>Pmt</b>	"run" 1,398.43

### Total Principal and Interest for a 30-Year Loan

How much total interest will you pay on a \$300,000 loan at 7.5% interest over 30 years? What is the total principal and interest paid?

STEPS	KEYSTROKES	DISPLAY
Clear calculator	<b>On/C</b> <b>On/C</b>	0.00
Enter Loan Amount	<b>3</b> <b>0</b> <b>0</b> <b>000</b> <b>Loan Amt</b>	300,000.00
Enter annual Interest rate	<b>7</b> <b>.</b> <b>5</b> <b>Int</b>	7.50
Enter Term in years	<b>3</b> <b>0</b> <b>Term</b>	30.00
Find monthly P&I Payment	<b>Pmt</b>	"run" 2,097.64
Find total # of Payments	<b>Amort</b>	"run" 1-360
Find total Interest paid	<b>Amort</b>	455,151.67
Find total Principal paid	<b>Amort</b>	300,000.00
Find total Principal/Interest	<b>Amort</b>	755,151.67

### Amortization List for Individual Year(s) — Using “Next” Feature

How much total interest and principal will you pay on a 30-year, \$90,000 loan at 8% interest during the first year? The second year? Third year, etc.? First, find monthly payment to “set-up” this loan. The calculator will automatically advance to the next year upon subsequent presses of **Amort**.

STEPS	KEYSTROKES	DISPLAY
Clear calculator	<b>On/C</b> <b>On/C</b>	0.00
Enter Loan Amount	<b>9</b> <b>0</b> <b>000</b> <b>Loan Amt</b>	90,000.00
Enter annual Interest rate	<b>8</b> <b>Int</b>	8.00
Enter Term in years	<b>3</b> <b>0</b> <b>Term</b>	30.00
Find monthly P&I Payment	<b>Pmt</b>	“run” 660.39
Enter Year 1	<b>1</b> <b>Amort</b>	“run” 1-12
Find total interest in Year 1	<b>Amort</b>	7,172.83
Find total principal in Year 1	<b>Amort</b>	751.83
Find P&I in Year 1	<b>Amort</b>	7,924.66
Find remaining balance	<b>Amort</b>	89,248.17
Find remaining term	<b>Amort</b>	29.00
Display next year (Year 2)	<b>Amort</b>	“run” 13-24
Find total interest in Year 2	<b>Amort</b>	7,110.43
Find total principal in Year 2	<b>Amort</b>	814.23
Find P&I in Year 2	<b>Amort</b>	7,924.66
Find remaining balance	<b>Amort</b>	88,433.94
Find remaining term	<b>Amort</b>	28.00
Display next year (Year 3)	<b>Amort</b>	“run” 25-36

(etc. — sequence repeats for each year)

### APR, Total Finance Charges (Including Mortgage Insurance)

You are financing a mortgage of \$275,000 for 30 years at a nominal or quoted rate of 6.25% interest. The cost of getting the loan is quoted as 1.5 points plus \$550 in fees. What is the APR (including Mortgage Insurance), total finance charges, principal amount financed, total cost, P&I payment, monthly Mortgage Insurance, and PIMI payment? Mortgage Insurance is estimated at 0.65% of the loan amount.

STEPS	KEYSTROKES	DISPLAY
Clear calculator	<b>On/C</b> <b>On/C</b>	0.00
Enter Loan Amount	<b>2</b> <b>7</b> <b>5</b> <b>000</b> <b>Loan Amt</b>	275,000.00
Enter Interest	<b>6</b> <b>.</b> <b>2</b> <b>5</b> <b>Int</b>	6.25
Enter Term	<b>3</b> <b>0</b> <b>Term</b>	30.00
Find monthly Payment	<b>Pmt</b>	"run" 1,693.22
Enter mortgage ins. %	<b>.</b> <b>6</b> <b>5</b> <b>Shift</b> <b>9</b>	0.65
<i>Find Loan Costs:</i>		
Recall Loan Amount	<b>Rcl</b> <b>Loan Amt</b>	275,000.00
Find point cost	<b>X</b> <b>1</b> <b>.</b> <b>5</b> <b>%</b> <b>=</b>	4,125.00
Add fees and find total	<b>+</b> <b>5</b> <b>5</b> <b>0</b> <b>=</b>	4,675.00
Find APR*	<b>Shift</b> <b>Int</b>	"run" 7.24
Find finance charges (including mortgage insurance* and total Interest paid)	<b>Int</b>	392,860.03
Find amount financed (principal minus pts/fees)	<b>Int</b>	270,325.00
Find total finance charges plus amount financed	<b>Int</b>	663,185.03
P&I Payment	<b>Int</b>	1,693.22
Monthly mortgage insurance	<b>Int</b>	148.96
PIMI payment**	<b>Int</b>	1,842.18

\*APR includes Mortgage Insurance, if entered. Total finance charges include mortgage insurance over the life of the loan, to present a worst-case scenario; however, most people can eliminate MI once a certain LTV is met.

\*\*Payment includes estimated monthly Mortgage Insurance.



## Bi-Weekly Mortgages

Your calculator includes a built-in Bi-Weekly mortgage function (**Shift Term**), which allows you to convert established, fully amortized monthly mortgages into Bi-Weeklies (in which one-half the monthly payment is made every two weeks). Because you make two extra half-payments per year (since 26 Bi-Weekly payments is like making 13 payments/year), these kinds of loans can amount to large interest savings and a substantial reduction in the time it takes to pay them off.

You begin solving these problems by setting up the initial monthly mortgage and then pressing **Shift Term**. A second press of **Term** shows the total interest savings over the entire mortgage, a third press calculates the total interest paid, a fourth press shows the total principal paid, and a fifth press shows the total payments. A press of **Pmt** will calculate the Bi-weekly Payment.

## Bi-Weekly Term Reduction and Payment

Find the monthly payment on a 30-year, \$212,500 mortgage at 7.85% annual interest. Then convert it to a Bi-Weekly and find out how many years it will take to pay off this mortgage, the total interest savings, total payments and the Bi-Weekly payment.

STEPS	KEYSTROKES	DISPLAY
Clear calculator	<b>On/C On/C</b>	0.00
Enter Mortgage Amount	<b>2 1 2 5 0 0</b> <b>Loan Amt</b>	212,500.00
Enter Term in years	<b>3 0</b> <b>Term</b>	30.00
Enter annual Interest rate	<b>7 . 8 5</b> <b>Int</b>	7.85
Find monthly P&I Payment	<b>Pmt</b>	"run" 1,537.09
Find Bi-Weekly Term	<b>Shift Term</b>	"run" 22.97
Find total interest savings	<b>Term</b>	94,305.23
Find total interest paid	<b>Term</b>	246,545.97
Find total principal	<b>Term</b>	212,500.00
Find total payments	<b>Term</b>	459,045.97
Find Bi-Weekly Payment	<b>Pmt</b>	768.54
Clear calculator	<b>On/C On/C</b>	0.00

**Qualifying Loan Amount and Sales Price**  
**(Complete Example Including Down Payment, Tax / Insurance,**  
**Monthly Association Dues)**

Buyers who make \$75,000 annually and have \$500 in long-term monthly debt wish to buy a home but can only afford \$5,000 down. If you include estimated annual property taxes and insurance of 1.5% and 0.25%, respectively, a mortgage insurance rate of 0.6% and monthly homeowner's association dues of \$50, for what loan amount can they qualify? What sales price can they afford? What's their total payment? (Use 7.5% interest, 30-year term and qualifying ratios of 28%:36%).

STEPS	KEYSTROKES	DISPLAY
Clear calculator	<b>On/C On/C</b>	0.00
Enter annual Income	<b>7 5 000 Inc</b>	75,000.00
Enter monthly Debt	<b>5 0 0 Debt</b>	500.00
Enter Down Payment	<b>5 000 Dn Pmt</b>	5,000.00
Set annual prop. Tax rate	<b>1 1.5 Tax</b>	1.50
Set annual prop. Ins. rate	<b>0.25 Shift Tax</b>	0.25
Set annual Mtg. Ins. rate	<b>0.6 Shift 9</b>	0.60
Enter homeowner's dues	<b>5 0 Shift Debt</b>	50.00
Enter Interest	<b>7.5 Int</b>	7.50
Enter Term	<b>30 Term</b>	30.00
Enter Qualifying Ratios	<b>28 36 Qual 1</b>	28.00-36.00
Find Qualifying Loan Amt.	<b>Qual 1</b>	"run" 189,119.31
Find Price	<b>Price</b>	194,119.31

**— DO NOT CLEAR CALCULATOR —**

Now find the monthly P&I payment (principal & interest), PITI payment (principal, interest, tax and insurance) and Total Payment (including monthly association dues):

STEPS	KEYSTROKES	DISPLAY
Find P&I Payment	<b>Pmt</b>	"run" 1,322.35
Find PITI Payment	<b>Pmt</b>	1,700.00
Find total Payment	<b>Pmt</b>	1,750.00

### **“Restricted” Qualifying**

Buyers who make \$68,000 annually and have \$750 in long-term monthly debt wish to buy a home offered at \$175,000. They can only afford \$5,000 for the down payment. For what maximum loan amount can they qualify? (Use previously stored 7.5% interest, 30-year term, Tax/Ins./MI rates of 1.5%, .25% and 0.6%, respectively, and qualifying ratios of 28%:36%. Re-enter \$50 association dues and \$5,000 down.)

*Note: If you're not continuing from the previous example, you'll need to enter Qualifying Ratios (enter **2** **8** **3** **6** **Qual 1**), as well as interest, term, tax and insurance.*

STEPS	KEYSTROKES	DISPLAY
Clear calculator	<b>On/C</b> <b>On/C</b>	<b>0.00</b>
Recall Interest	<b>Rcl</b> <b>Int</b>	<b>7.50</b>
Recall Term	<b>Rcl</b> <b>Term</b>	<b>30.00</b>
Recall annual property Tax rate	<b>Rcl</b> <b>Tax</b>	<b>1.50</b>
Recall annual property Insurance rate	<b>Rcl</b> <b>Shift</b> <b>Tax</b>	<b>0.25</b>
Re-enter annual MI rate	<b>6</b> <b>Shift</b> <b>9</b>	<b>0.60</b>
Re-enter assn. dues	<b>5</b> <b>0</b> <b>Shift</b> <b>Debt</b>	<b>50.00</b>
Enter Down Payment	<b>5</b> <b>000</b> <b>Dn Pmt</b>	<b>5,000.00</b>
Enter annual Income	<b>6</b> <b>8</b> <b>000</b> <b>Inc</b>	<b>68,000.00</b>
Enter monthly Debt	<b>7</b> <b>5</b> <b>0</b> <b>Debt</b>	<b>750.00</b>
Display Qualifying Ratios	<b>Qual 1</b>	<b>28.00-36.00</b>
Find “restricted” Qualifying Loan Amount	<b>Qual 1</b>	<b>“run” 137,725.41</b>

— DO NOT CLEAR CALCULATOR —

### **“Unrestricted” Qualifying**

The amount calculated on the previous page is the loan they may qualify for, based on current income and debt. What are the buyer's actual income and debt ratios? What does the “unrestricted” loan amount calculate to, and which side is it based on (e.g., buyer's income or debt)? What is the buyer's maximum allowable debt?

STEPS	KEYSTROKES	DISPLAY
Find actual Ratios	<b>Qual 1</b>	<b>“run” 22.76-36.00</b>
Find “unrestricted” Loan Amount	<b>Qual 1</b>	<b>UNR 170,870.75 LA INC*</b>
Find allowable Debt	<b>Qual 1</b>	<b>ALW 453.33 MO DEBT</b>

(Cont'd)

(Cont'd)

*\*The Maximum Qualifying Loan Amount displayed is the "restricted" loan amount that the buyer may qualify for. This loan amount is based on whichever of the two ratios, income or debt, limits the buyer the most. If the buyer's maximum qualifying loan amount is restricted by their debt, then the unrestricted qualifying loan amount will also be displayed. The unrestricted qualifying loan amount is based purely on the buyer's income and is not restricted by their debt. If the maximum qualifying loan amount is restricted by their income, the unrestricted qualifying loan amount will not be displayed. This is useful to show clients what size loan they could qualify for if they paid off debt. Here, the calculator will display the loan amount with "UNR" (for unrestricted) and "INC" indicate that it is based on income.*

### Finding Qualifying Loan Amount and Sales Price for an Interest-Only Loan

Given an interest rate of 7.5%, a term of 30 years, and the stored 28%:36% qualifying ratios, for what size Interest-only loan and what sales price can a buyer qualify for, if he or she makes \$75,000 annually and has \$500 in long-term, monthly debt? The buyer plans to put \$35,000 down. Also, what is the monthly Interest-only payment?

*Note: If you are not continuing from the previous example, you'll need to re-enter the qualifying ratios (enter **2 8 3 6 Qual 1**).*

STEPS	KEYSTROKES	DISPLAY
Clear calculator	<b>On/C On/C</b>	0.00
Enter Term in years	<b>3 0 Term</b>	30.00
Enter annual Interest	<b>7 . 5 Int</b>	7.50
Clear property Tax rate*	<b>0 Tax</b>	0.00
Clear insurance rate*	<b>0 Shift Tax</b>	0.00
Enter annual Income	<b>7 5 000 Inc</b>	75,000.00
Enter monthly Debt	<b>5 0 0 Debt</b>	500.00
Enter Down Payment	<b>3 5 000 Dn Pmt</b>	35,000.00
Display Qualifying Ratios	<b>Shift Qual 1</b>	28.00-36.00
Find Qualifying Loan Amount	<b>Qual 1</b>	"run" 280,000.00
Find Price	<b>Price</b>	315,000.00
Find monthly Interest-Only Payment	<b>Shift Pmt</b>	1,750.00

*\*Tax and Insurance will need to be cleared if you're continuing from the previous example where the rates were stored.*

*Note: **Shift Qual 2** will qualify based on Stored Qual2 ratios (35% – 42%), or you may enter any ratios of your choice prior to performing the calculation (e.g., **2 9 4 1 Shift Qual 2**).*

### **Finding Income Required and Allowable Monthly Debt**

Using the 28%:36% ratios, how much income would a buyer need to finance a \$250,000 home, if they put 20% down? What is the maximum allowable debt? What is the dollar down payment and loan amount? What is the monthly payment? Use 7.5% interest for 30 years. Estimate property Tax/Insurance rates of 1.5% and .25%, respectively. Clear mortgage insurance rate to zero, as they are putting 20% down.

STEPS	KEYSTROKES	DISPLAY
Clear calculator	<b>On/C On/C</b>	0.00
Enter annual Interest	<b>7 ▢ 5 Int</b>	7.50
Enter Term in years	<b>3 0 Term</b>	30.00
Enter Tax rate	<b>1 ▢ 5 Tax</b>	1.50
Enter Insurance rate	<b>▢ 2 5 Shift Tax</b>	0.25
Delete Mortgage Ins. rate	<b>0 Shift 9</b>	0.00
Enter sales Price	<b>2 5 0 000 Price</b>	250,000.00
Enter Down Payment %	<b>2 0 Dn Pmt</b>	20.00
Find Down Payment \$	<b>Dn Pmt</b>	50,000.00
Find Loan Amount	<b>Loan Amt</b>	200,000.00
Display Qualifying Ratios*	<b>Qual 1</b>	28.00-36.00
Find Income required	<b>Qual 1</b>	"run" 75,557.67
Find maximum allowable monthly Debt	<b>Qual 1</b>	"run" 503.72
Find P&I Payment	<b>Pmt</b>	1,398.43
Find PITI Payment	<b>Pmt</b>	1,763.01

\*If you are not continuing from the previous example, you'll need to re-enter the qualifying ratios (enter **2 8 ▢ 3 6 Qual 1**).

### Qualifying Comparison (Comparing Two Different Loans or Two Qualifying Ratios at Once)

Given a buyer's annual income of \$45,000, \$500 in long-term monthly debt, estimated monthly homeowner's association dues of \$50, an interest rate of 7.25% and term of 30 years, what loan amounts can they qualify for based on both 28%:36% and 29%:41% ratios? Also, find the corresponding total monthly payment for each. Estimate property tax/insurance rates of 1.25% and .3%, respectively, and a mortgage insurance rate of .45%.

STEPS	KEYSTROKES	DISPLAY
Clear calculator	<b>On/C On/C</b>	0.00
Enter annual Income	<b>4 5 000 Inc</b>	45,000.00
Enter monthly Debt	<b>5 0 0 Debt</b>	500.00
Enter monthly assn. dues	<b>5 0 Shift Debt</b>	50.00
Enter Interest	<b>7 . 2 5 Int</b>	7.25
Enter Term	<b>3 0 Term</b>	30.00
Enter property Tax rate	<b>1 . 2 5 Tax</b>	1.25
Enter property Ins. rate	<b>. 3 Shift Tax</b>	0.30
Enter Mortgage Ins. rate	<b>. 4 5 Shift 9</b>	0.45
Display Qual 1 Ratios*	<b>Qual 1</b>	28.00-36.00
Find Qual 1 Qual. Loan	<b>Qual 1</b>	"run" 94,245.94
Find Qual 1 P&I Payment	<b>Pmt</b>	642.92
Find Qual 1 PITI Payment	<b>Pmt</b>	800.00
Find Qual 1 total Payment	<b>Pmt</b>	850.00

#### — DO NOT CLEAR CALCULATOR —

\*If you are not continuing from the previous example, you'll need to re-enter the qualifying ratios (enter **2 8 : 3 6 Qual 1**).

STEPS	KEYSTROKES	DISPLAY
Enter Qual 2 Ratios	<b>2 9 : 4 1 Qual 2</b>	29.00-41.00
Find Qual 2 Qual. Loan	<b>Qual 2</b>	"run" 116,334.83
Find Qual 2 P&I Payment	<b>Pmt</b>	793.61
Find Qual 2 PITI Payment	<b>Pmt</b>	987.50
Find Qual 2 total Payment	<b>Pmt</b>	1,037.50
*Return to Canadian Interest Mode, if returning to Canadian examples	<b>Shift +</b>	INT Cdn
*Return calculator to default GDS:TDS Ratios	<b>3 2 : 4 0 Qual 1</b>	32.00-40.00
	<b>3 5 : 4 2 Qual 2</b>	35.00-42.00

\***IMPORTANT:** Be sure to return your calculator to "Canadian Mode" by pressing **Shift +**, if you wish to perform Canadian mortgage loan problems. Also, be sure to return the calculator to its original Canadian Qualifying ratios.

## APPENDIX

### Default Settings

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Performing a total Reset (see below) will return the calculator to the following default settings:

- Canadian Interest Mode
- 12 Periods per Year = Reset to 12 Upon **Off**
- Property Tax/Ins. = Values Cleared Upon **Off**
- Mortgage Ins. = Values Cleared Upon **On/C** **On/C**
- Amortization Range = Specified Year (Ent-Ent)
- Qualifying Ratios Displayed 1st
- Qual 1 Ratios = 32%-40% (Canadian)
- Qual 2 Ratios = 35%-42% (Canadian)
- Month Offset to January (1)
- Tax Bracket = 28% (U.S. Mode only)
- End Mode

### Reset

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#### Manual Reset

If your calculator's display should ever freeze or "lock up," press Reset — a small hole located to the left of the **Off** key — to perform a total reset. (It is recommended you use a straightened paper clip, as the hole is extremely small).

#### **Keystroke Reset — Returning the Calculator to its Original Factory Settings**

You may at times want to reset your calculator to its factory settings (e.g., reset all registers and Preference Settings to their original default values). To do this, turn off the calculator, hold down the **ⓧ** key, and then turn it back on.

### Error Codes

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With an incorrect entry or answer beyond the range of the calculator, the display will show one of the following error messages. To clear an error, simply press any key.

<b>OFLO</b>	—	Number Too Large to Display
<b>DIV Error</b>	—	Attempted to Divide by Zero
<b>TVM Error</b>	—	Time-Value-of-Money Error
<b>ENT Error</b>	—	Invalid Entry
<b>PPY Error</b>	—	Payments Per Year Error
<b>QL Error</b>	—	Qualifying Error

### Auto Shut-Off

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Your calculator is designed to shut itself off after about 8-12 minutes of non-use.

### Battery

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This model uses one (1) CR2016 battery (included). Should your calculator display become very dim or erratic, replace the battery.

*Note: Please use caution when disposing of your old batteries, as they contain hazardous chemicals.*

Replacement batteries are available at most discount or electronics stores. You may also call Calculated Industries at 1-775-885-4900.

**Replacing the Battery:** Turn the calculator over and open user guide door located at the top. Pull battery holder out (top left corner) and turn over. Remove old battery and slide new battery under tabs. Turn holder over (negative side facing you) and insert into calculator.





## **Repair and Return**

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### **Warranty, Repair and Return Information**

#### *Return Guidelines:*

1. Please read the ***Warranty*** in this User's Guide to determine if your Calculated Industries product remains under warranty ***before*** calling or returning any device for evaluation or repairs.
2. If your calculator won't turn on, check the batteries as outlined in the User's Guide.
3. If you need more assistance, please contact.
4. If you believe you need to return your product, please call a representative.

## **Warranty**

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### **Warranty Repair Service – U.S.A.**

Calculated Industries (“CI”) warrants this product against defects in materials and workmanship for a period of **one (1) year from the date of original consumer purchase in the U.S.** If a defect exists during the warranty period, CI at its option will either repair (using new or remanufactured parts) or replace (with a new or remanufactured calculator) the product at no charge.

THE WARRANTY **WILL NOT APPLY** TO THE PRODUCT IF IT HAS BEEN DAMAGED BY MISUSE, ALTERATION, ACCIDENT, IMPROPER HANDLING OR OPERATION, OR IF UNAUTHORIZED REPAIRS ARE ATTEMPTED OR MADE. SOME EXAMPLES OF DAMAGES NOT COVERED BY WARRANTY INCLUDE, BUT ARE NOT LIMITED TO, BATTERY LEAKAGE, BENDING, A BLACK “INK SPOT” OR VISIBLE CRACKING OF THE LCD, WHICH ARE PRESUMED TO BE DAMAGES RESULTING FROM MISUSE OR ABUSE.

To obtain warranty service in the U.S., please go to the website.

A repaired or replacement product assumes the remaining warranty of the original product or 90 days, whichever is longer.

### **Non-Warranty Repair Service – U.S.A.**

Non-warranty repair covers service beyond the warranty period, or service requested due to damage resulting from misuse or abuse.

Contact to obtain current product repair information and charges. Repairs are guaranteed for 90 days.

### **Repair Service – Outside the U.S.A.**

To obtain warranty or non-warranty repair service for goods purchased outside the U.S., contact the dealer through which you initially purchased the product. If you cannot reasonably have the product repaired in your area, you may contact to obtain current product repair information and charges, including freight and duties.

### **Disclaimer**

CI MAKES NO WARRANTY OR REPRESENTATION, EITHER EXPRESS OR IMPLIED, WITH RESPECT TO THE PRODUCT'S QUALITY, PERFORMANCE, MERCHANTABILITY, OR FITNESS FOR A PARTICULAR PURPOSE. AS A RESULT, THIS PRODUCT, INCLUDING BUT NOT LIMITED TO, KEYSTROKE PROCEDURES, MATHEMATICAL ACCURACY AND PREPROGRAMMED MATERIAL, IS SOLD "AS IS," AND YOU THE PURCHASER ASSUME THE ENTIRE RISK AS TO ITS QUALITY AND PERFORMANCE.

IN NO EVENT WILL CI BE LIABLE FOR DIRECT, INDIRECT, SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES RESULTING FROM ANY DEFECT IN THE PRODUCT OR ITS DOCUMENTATION.

The warranty, disclaimer, and remedies set forth above are exclusive and replace all others, oral or written, expressed or implied. No CI dealer, agent, or employee is authorized to make any modification, extension, or addition to this warranty.

Some states do not allow the exclusion or limitation of implied warranties or liability for incidental or consequential damages, so the above limitation or exclusion may not apply to you. This warranty gives you specific rights, and you may also have other rights, which vary from state to state.

### **Legal Notes**

This equipment has been certified to comply with the limits for a Class B computing device, pursuant to Subpart J of Part 15 of FCC rules.

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