

# Excel CheatSheet

## Complex Loan calculator

### Description

A concise guide to the construction and workings of a Microsoft Excel workbook that features a complex loan calculator allowing for multiple repayment layers.

### Downloads

- **Spreadsheet:** <https://createmange.files.wordpress.com/2019/09/complex-loan-payment-calculator.xlsx>
- **CheatSheet:** <https://createmange.files.wordpress.com/2019/09/complex-loan-payment-calculator-cheatsheet-v1.pdf>

### Overview

#### Input Panel

The screenshot shows three main sections: **Loan Details**, **Extra payments**, and **Loan summary**. Callouts include: "Use this to show or hide this panel" (pointing to the left sidebar), "You can enter values in the green cells" (pointing to green input cells), "Use in-cell selectors to choose options" (pointing to dropdown menus), and "Link to further information" (pointing to an information icon).

#### Input Panel key

Loan Details			Extra payments			Loan summary		
Annual interest rate	3.63%	<b>A</b>	Loan Start	28 Aug 2019	<b>G</b>	Scheduled payment	<b>N</b>	\$354.45
Loan term (in years)	18.3	<b>B</b>	Loan End	28 Nov 2037	<b>H</b>	Scheduled no. of payments	<b>O</b>	477
Payments per year	26	<b>C</b>	Actual Payment	\$400 (+\$46)	<b>J</b>	Actual no. of payments	<b>P</b>	192
Loan amount	\$123,500	<b>D</b>	Additional payments	\$4,000	<b>K</b>	Total interest	<b>Q</b>	\$16,135
Monthly Fees	\$20	<b>E</b>	Additional payments (mth)	January	<b>L</b>	Amount saved	<b>R</b>	\$31,241
Payment frequency	Fortnightly	<b>F</b>	Total extra payments	\$94,745	<b>M</b>	Early end date	<b>S</b>	20 Jan 2027

#### Column key

Date	Period	Scheduled Payment	Scheduled Extras	Additional Extras	Manual Extras	Total Payment	Principal	Interest	Monthly Fees	Balance
19 Oct 22	82	\$354.74	\$21.00			\$375.74	\$264.35	\$111.39		\$79,738.05
02 Nov 22	83	\$354.74	\$21.00			\$375.74	\$264.72	\$111.02	\$20.00	\$79,453.34
16 Nov 22	84	\$354.74	\$21.00			\$375.74	\$265.11	\$110.63		\$79,188.22
30 Nov 22	85	\$354.74	\$21.00			\$375.74	\$265.48	\$110.26		\$78,922.74
14 Dec 22	86	\$354.74	\$21.00			\$375.74	\$285.85	\$109.89	\$20.00	\$78,636.89
28 Dec 22	87	\$354.74	\$21.00			\$375.74	\$266.25	\$109.49		\$78,370.64
11 Jan 23	88	\$354.74	\$21.00	\$4,000.00		\$4,375.74	\$4,286.62	\$109.12	\$20.00	\$74,084.02
25 Jan 23	89	\$354.74	\$21.00			\$375.74	\$272.59	\$103.15		\$73,811.43
08 Feb 23	90	\$354.74	\$21.00			\$375.74	\$278.77	\$109.97	\$20.00	\$73,511.46
22 Feb 23	91	\$354.74	\$21.00			\$375.74	\$273.38	\$102.36		\$73,245.09
08 Mar 23	92	\$354.74	\$21.00			\$375.74	\$293.76	\$101.98	\$20.00	\$72,951.33
22 Mar 23	93	\$354.74	\$21.00			\$375.74	\$274.17	\$101.57		\$72,677.16
05 Apr 23	94	\$354.74	\$21.00			\$375.74	\$294.55	\$101.19	\$20.00	\$72,382.62
19 Apr 23	95	\$354.74	\$21.00			\$375.74	\$274.06	\$100.78		\$72,107.66

Callouts in the table: "Extra Columns" points to columns 4-6. Red circles 1-11 highlight specific cells in the 90th row.

## The Workings

### Values

#### Loan Details

<b>A</b>	<b>Annual interest rate</b>	Set this value to your loan interest rate, as a percentage
D2	Range name: InterestRate	
<b>B</b>	<b>Loan term (years)</b>	Set this value to your loan term, in years, as a decimal
D3	Range name: LoanTerm	
<b>D</b>	<b>Loan amount</b>	Set this value to your loan amount
D5	Range name: LoanAmount	
<b>E</b>	<b>Monthly Fees</b>	Set this value to the total of your monthly bank fees
D6	Range name: MonthlyFees	
<b>F</b>	<b>Payment frequency</b>	Select weekly, fortnightly or monthly according to your payment cycle
D7	Range name: PaymentFrequency	
<b>G</b>	<b>Loan Start</b>	Set this value to the date that your loan payments start
H2	Range name: LoanStart	
<b>I</b>	<b>Actual Payment</b>	Enter a repayment amount to override the scheduled payment amount set by the lender. <b>If not adjusting the set amount, leave this blank.</b>
I4	Range name: ActualPayment	

## Formulas

### Loan Details

<p><b>C</b> Payments per year</p> <p>D4 Range name: PaymentsPerYear</p>	<p>This formula checks whether the payment frequency selected in PaymentFrequency is weekly, fortnightly or monthly then calculates accordingly to provide the number of payments each year, as a decimal. The Validation values are set in O10:O12 (hidden columns) but are only used to trigger the appropriate IF Statement and only need adjusting should you want to modify different payment cycles.</p>
<p><b>FORMULA</b></p> <p>=IF(PaymentFrequency=FrequencyWeekly,365/7, IF(PaymentFrequency=FrequencyFortnightly,365/14, IF(PaymentFrequency=FrequencyMonthly,12,0)))0</p>	

### Extra Payments

<p><b>H</b> Loan End</p> <p>H3 Range name: LoanEnd</p>	<p>This formula returns a date a number of months after the LoanStart Date. That number is set in the second argument of the EDATE function by the formula; <b>LoanTerm</b> x 12.</p>
<p><b>FORMULA</b></p> <p>=EDATE(LoanStart,LoanTerm*12)</p>	

<p><b>I</b> Extra Payment</p> <p>H4 Range name: ExtraPayment</p>	<p>This formula deducts the ScheduledPayment from the ActualPayment to produce the ExtraPayment (if ActualPayment is a number). It's a roundabout way of going about it, but I feel it's better to enter the actual deposit rather than the extra (displayed alongside).</p>
<p><b>FORMULA</b></p> <p>=IF(ISNUMBER(ActualPayment),ActualPayment-ScheduledPayment,0)</p>	

<p><b>J</b> Additional payments</p> <p>XX Range name:</p>	
<p><b>FORMULA</b></p>	

<p><b>K</b> Additional payments (mth)</p> <p>XX Range name:</p>	
<p><b>FORMULA</b></p>	

<p><b>L</b> Total extra payments</p> <p>XX Range name:</p>	<p>This formula</p>
<p><b>FORMULA</b></p>	

### Loan Summary

<p><b>M</b> Scheduled payment</p> <p>XX Range name:</p>	<p>This formula</p>
<p><b>FORMULA</b></p>	

## Formulas

<b>N</b>	Scheduled no. of payments	This formula
XX	Range name:	
FORMULA		

<b>O</b>	Actual no. of payments	This formula
XX	Range name:	
FORMULA		

<b>P</b>	Total interest	This formula
XX	Range name:	
FORMULA		

<b>Q</b>	Amount saved	This formula
XX	Range name:	
FORMULA		

<b>R</b>	Early end date	This formula
XX	Range name:	
FORMULA		

## Table Columns

<b>1</b>	Date	
XX	Range name:	
FORMULA		

<b>2</b>	Period	
XX	Range name:	
FORMULA		

<b>3</b>	Scheduled Payment	
XX	Range name:	
FORMULA		

<b>4</b>	<b>Scheduled Extras</b>	
XX Range name:		
FORMULA		

<b>5</b>	<b>Additional Extra</b>	
XX Range name:		
FORMULA		

<b>6</b>	<b>Manual Extras</b>	
XX Range name:		
FORMULA		

<b>7</b>	<b>Total Payment</b>	
XX Range name:		
FORMULA		

<b>8</b>	<b>Principal</b>	
XX Range name:		
FORMULA		

<b>9</b>	<b>Interest</b>	
XX Range name:		
FORMULA		

<b>10</b>	<b>Monthly Fees</b>	
XX Range name:		
FORMULA		

<b>11</b>	<b>Balance</b>	
XX Range name:		
FORMULA		

# Symbols and conventions used

## Screen actions

- | Vertical lines are used to show the flow in a sequence of commands, i.e. [Alt] & [F] | [P], or Click the Office button | New | Installed Templates.
- [F] ► [P] Commands separated by an arrow indicate action sequences; Often when one has a number of choices in a menu or dialog box. i.e. to open the Print dialog via the File menu.
- [xx | xx] Square brackets separated by vertical lines are used where there are a number of choices, i.e. Office button | New | [Installed Templates | Presentations].
- Themes** Reference to a group on a Ribbon. i.e. Home tab | **Font** | [B].
- [Ctrl] Square brackets enclosing an item indicate keys.
- [Ctrl] + [C] Square brackets joined with a plus sign show keys to be pressed and held in sequence, i.e. hold [Ctrl] then press [C] to copy.

## Key Information

📖 Notes: Supplemental and usually focussed

📌 Tips

⚠ Warnings and cautionary notes

⚠ **WARNING, seriously!**

An Activity Panel like this is often an opportunity for you to practice and cement learning

**Code block**

Tooltip Text with a light grey underline indicates hidden information is available; a hyperlink ToolTip or a popup.

**Item** Bold, grey text indicates a key element in a set of instructions.

## Create a list of the Range Names

To help with auditing or checking out a workbook, you can list all of the Range Names and their locations. First though – if you're doing it for this workbook - you'll need to go to a safe area in the Extra Payment Calculator worksheet to paste it. Why there? Well, most of the range names are scoped to that worksheet, so doing the sensible thing of pasting the list in a blank worksheet has to wait a bit. So hold [Ctrl] then tap [End] to go to the furthest point down and right of your spreadsheet. Release the keys, tap [Home] to bring the cursor back to the left.

**Now that we are safely away from your data, let's get that list!**

📌 From the Formulas tab of the ribbon, in the **Defined Names** group, click the Use In Formula tool.

📌 Choose Paste Names from the submenu then click the [Paste List] button.

Now, **don't do a thing!** Pause, breathe! *Read on...*

**Now let's cut and paste that list to a blank worksheet in case you need to expand your table of data**

The list you have just pasted is highlighted. Great! Let's cut and paste it somewhere sensible...

📌 Hold [Ctrl] then tap [X] to cut the selection from the worksheet and place it in memory.

📌 Select a cell in a new worksheet for a place to start the list then hold [Ctrl] then tap [V] to paste memory to worksheet

**Now to pretty it up**

📌 Click on the header of the first column of data, hold and drag right to the next column.

📌 Now that both columns are selected, release the mouse button and reposition between the columns until the cursor changes to arrowheads, then double-click to auto-adjust the column widths