

Revolving Loan Calculator

With this program, the user can track the outstanding principal and accrued interest balances on revolving loans and calculate accrued interest on term loans. The Revolving Loan Calculator (RLC) compounds interest on a daily basis. The program is designed primarily for revolving loans between individuals and is not meant to replace the more detailed loan calculators used by financial institutions.

Required Input

- Beginning Date
- Beginning Loan Balance
- Beginning Accrued Interest Balance
- Annual Interest Rate
- Year Length for Accrued Interest Calculations
 - 360 days per year
 - 365 days per year- Commonly used by lending institutions
 - 365.25 days per year
- Transactions (Interest Paid, Money Borrowed, Principal Paid)

Beginning date	1/1/2003
Beginning loan balance	100,000.00
Beginning accrued interest balance	\$ -
Annual interest rate	8%
Year length for accrued interest calculations	365

In the example shown above, a loan of \$100,000 with an 8% annual interest rate is taken out on January 1, 2003. Accrued interest is calculated based on 365 days per year.

Enter transactions in the numbered rows starting with Line 2. For each transaction, the “Evaluation/Transaction Date” is required in order for the “Outstanding Principal Balance” and “Accrued Interest Balance” to calculate properly. All entries are displayed in blue, while calculations are displayed in black.



	Evaluation/ Transaction date	Interest Rate	Interest Paid	Money Borrowed	Principal Paid	Outstanding Principal Balance	Accrued Interest Balance
1	1/1/2003	8.00%	xxxxxx	xxxxxx	xxxxx	\$ 100,000.00	\$ -
2	2/1/2003	8.00%		3,000.00		\$ 103,000.00	\$ 679.45
3							
4							

In the example shown above, \$3,000 is borrowed on February 1, 2003. Since no principal was paid, the “Outstanding Principal Balance” increases to \$103,000 while the “Accrued Interest Balance” equals \$679.45. This represents the amount of interest due as of February 1.

Understanding Calculations

When an “Evaluation/Transaction Date” is entered, the “Outstanding Principal Balance” and “Accrued Interest Balance” are calculated.

Outstanding Principal Balance

The amount of money borrowed that remains to be paid. This is calculated by taking the previous line’s “Outstanding Principal Balance” minus the current line’s “Principal Paid” plus the current line’s “Money Borrowed”.

Accrued Interest Balance

The amount of interest charged for borrowing money, which remains to be paid. This is calculated by taking the previous line’s “Accrued Interest Balance” minus the current line’s “Interest Paid”, plus the interest accrued on the previous line’s “Outstanding Principal Balance”. The accrued interest for the previous line’s “Outstanding Principal Balance” is found by multiplying the “Annual Interest Rate” and the previous line’s “Outstanding Principal Balance”, then dividing by the number of days for that period (ie. date of current line minus date of previous line divided by the selection made in the input section for “Year Length for Accrued Interest Calculations”).

For example, in Line 2 of the example, the “Accrued Interest Balance” is \$679.45. Thus, the calculation so far equals \$0 – 0 interest paid + accrual interest on previous outstanding principal balances. The accrued interest from the previous “Outstanding Principal Balance” is $(\$100,000 \times 0.08)$ divided by 365 days, or \$679.45. So, the final calculation is $\$0 - \$0 + \$679.45 = \679.45 .

Reports Generated

To demonstrate how a report will look over time, additional transactions are made.

	Evaluation/ Transaction date	Interest Rate	Interest Paid	Money Borrowed	Principal Paid	Outstanding Principal Balance	Accrued Interest Balance
1	1/1/2003	8.00%	xxxxxx	xxxxxx	xxxxx	\$ 100,000.00	\$ -
2	2/1/2003	8.00%	-	3,000.00		\$ 103,000.00	679.45
3	3/5/2003	8.00%		10,000.00		\$ 113,000.00	1,401.86
4	4/15/2003	8.00%	2,000.00		50,000.00	\$ 63,000.00	417.32
5	5/2/2003	8.00%		10,000.00		\$ 73,000.00	652.05
6	5/15/2003	7.00%		20,000.00		\$ 93,000.00	834.05

On March 5, 2003, an additional \$10,000 is borrowed. This creates an “Outstanding Principal Balance” of \$113,000 (\$103,000 + \$10,000) and an “Accrued Interest Balance” of \$1,401.86. The “Accrued Interest Balance” equals the previous “Accrued Interest Balance” (679.45) minus the “Interest Paid” (\$0) plus the interest charged on the previous “Outstanding Principal Balance”, (\$103,000 x 0.08) divided by (32 days/365 days), or \$1,051.34. Thus, \$679.45 - \$0 + \$722.41 = \$1,401.86.

On April 15, 2003, a total of \$52,000 is paid. Of this amount, \$2,000 is interest and \$50,000 is principal. After this transaction, the “Outstanding Principal Balance” is \$63,000 (\$113,000 - \$50,000) and the “Accrued Interest Balance” is \$417.32. The “Accrued Interest Balance” equals the previous “Accrued Interest Balance” (\$1,401) minus the “Interest Paid” (\$2,000.00) plus the interest charged on the previous “Outstanding Principal Balance”, (\$113,000 x 0.08) divided by (41 days/365 days), or \$1,015.45. Thus, \$1069.82 - \$2,000 + \$1,015.45 = \$417.32.

On May 2, 2003, an additional \$10,000 is borrowed. On May 15, 2003, an additional \$20,000 is borrowed. Moreover, the interest rate was reduced from 8% to 7%.

Example: Tracking a Revolving Loan

On September 12, 2003, John Smith receives a loan for \$150,000 at a 10% interest rate from his father. He would like to use the Revolving Loan Calculator to track his transactions. John enters the required information as shown below.

Beginning date	9/12/2003
Beginning loan balance	150,000.00
Beginning accrued interest balance	\$ -
Annual interest rate	10%
Year length for accrued interest calculations	365.25

John makes the following transactions:

On November 5, 2003, a total of \$42,000 is paid. Of this amount, \$2,000 is interest and \$40,000 is principal. After this transaction, the “Outstanding Principal Balance” is \$110,000 (\$150,000 - \$40,000) and the “Accrued Interest Balance” is \$217.66. The “Accrued Interest Balance” equals the previous “Accrued Interest Balance” (\$0) minus the “Interest Paid” (\$2,000) plus the interest charged on the previous “Outstanding Principal Balance” (\$150,000 x 0.10) divided by (54 days/365.25 days), or \$2,217.66.

Thus, $\$0 - \$2000 + \$2,217.66 = \217.66 .

On December 29, 2003, a total of \$41,500 is paid. Of this amount, \$1,500 is interest and \$40,000 is principal. After this transaction, the “Outstanding Principal Balance” is \$70,000 (\$110,000 - \$40,000) and the “Accrued Interest Balance” is \$343.94. The “Accrued Interest Balance” equals the previous “Accrued Interest Balance” (\$217.66) minus the “Interest Paid” (\$1,500) plus the interest charged on the previous “Outstanding Principal Balance” (\$110,000 x 0.10) divided by (54 days/365.25 days), or \$1,626.28.

Thus, $-\$1282.34 + \$1,626.28 = \$343.94$.

On January 15, 2004, no money is paid. By entering the date, however, accrued interest is calculated. On this date, the “Accrued Interest Balance” is \$669.75. The “Accrued Interest Balance” equals the previous “Accrued Interest Balance” (\$343.94) minus the “Interest Paid” (\$0) plus the interest charged on the previous “Outstanding Principal Balance” (\$70,000 x 0.10) divided by (17 days/365.25 days), or \$325.81. Thus, $\$343.94 + \$325.81 = \$669.75$.

On February 15, 2004, a total of \$51,200 is paid. Of this amount, \$1,200 is interest and \$50,000 is principal. After this transaction, the “Outstanding Principal Balance” is \$20,000 (\$70,000 - \$50,000) and the “Accrued Interest Balance” is \$63.86. The “Accrued Interest Balance” equals the previous “Accrued Interest Balance” (\$669.75) minus the “Interest Paid” (\$1,200) plus the interest charged on the unpaid principal balance (\$70,000 x 0.10) divided by (31 days/365.25

days), or \$594.11.

Thus, $-\$530.25 + \$594.11 = \$63.86$.

On April 20, 2004, \$5,000 is paid towards the principal of the loan. This brings the “Outstanding Principal Balance” to \$15,000 (\$20,000 - \$5,000) and the “Accrued Interest Balance” to \$419.78. The “Accrued Interest Balance” equals the previous “Accrued Interest Balance” (\$63.86) minus the “Interest Paid” (\$0) plus the interest charged on the previous “Outstanding Principal Balance” ($\$20,000 \times 0.10$) divided by (65 days/365.25 days), or \$355.92. Thus, $\$63.86 + \$355.92 = \$419.78$.

On May 20, 2004, the loan is paid off, with a payment of \$15,542.98. Of this amount, \$542.98 is interest and \$15,000 is principal.

	Evaluation/ Transaction date	Interest Rate	Interest Paid	Money Borrowed	Principal Paid	Outstanding Principal Balance	Accrued Interest Balance
1	9/12/2003	10.00%	xxxxxxx	xxxxxxx	xxxxxx	\$ 150,000.00	\$ -
2	11/5/2003	10.00%	2,000.00		40,000.00	\$ 110,000.00	217.66
3	12/29/2003	10.00%	1,500.00	-	40,000.00	\$ 70,000.00	343.94
4	1/15/2004	10.00%				\$ 70,000.00	669.75
5	2/15/2004	10.00%	1,200.00		50,000.00	\$ 20,000.00	63.86
6	4/20/2004	10.00%			5,000.00	\$ 15,000.00	419.78
7	5/20/2004	10.00%	542.98		15,000.00	\$ -	0.00
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Example: Calculating Interest on a Term Loan

Estimates of accrued interest balances are needed to complete year end financial statements. The revolving loan calculator can be used to estimate the end of year accrued interest balance on a term loan. John Smith purchased farmland on November 15, 2000, with a \$250,000 loan and an interest rate of 7% calculating interest using 365.25 days per year. As of June 30, 2003, the outstanding principal balance is \$179,000 and the accrued interest balance is \$6,209.23. How much interest does John owe as of December 31, 2003?

John enters the following in the input section:

Beginning date	6/30/2003
Beginning loan balance	179,000.00
Beginning accrued interest balance	\$ 6,209.25
Annual interest rate	7%
Year length for accrued interest calculations	365.25

John makes the following entries:

In Line 2, John enters 12/31/03 for the “Evaluation/Transaction Date” and 7% for the “Interest Rate.” This entry automatically calculates the “Accrued Interest Balance”, equally \$12,521.42.

	Evaluation/ Transaction date	Interest Rate	Interest Paid	Money Borrowed	Principal Paid	Outstanding Principal Balance	Accrued Interest Balance
1	6/30/2003	7.00%	xxxxxx	xxxxxx	xxxxxx	\$ 179,000.00	\$ 6,209.25
2	12/31/2003	7.00%				\$ 179,000.00	12,521.42