

## The "Right" Payment

from our research dept. ...

For a vast majority of consumers the payment represents the bottom line of whether a purchase or loan is "affordable".

Over the years we have explored the various parameters that can effect interest calculations and, thus, the resulting payment for a given transaction. We deal constantly with the issue of why different calculation tools produce distinct payments for the same transaction data. We thought the time was right to revisit that subject.

With all the variations of credit available to consumers in today's fast paced world, one common mainstay remains, for creditor and consumer alike, in determining the merits and soundness of a specific credit transaction; the monthly payment. In today's marketplace it is probably more appropriate to say the "periodic payment" i.e. weekly or biweekly.

For a vast majority of consumers the payment represents the bottom line of whether a purchase or loan is "affordable". For creditors, the payment is the measuring stick used to evaluate the soundness of the interest and charge calculations.

Since Carleton's niche of expertise is the credit math calculations themselves, we often hear the statement "hey, your payment doesn't match what I get from a program off of my PC, it must be wrong."

Over the years we have expressed the opinion that "wrong" is a dangerous word to use in this business. The factors that go into determining the payment are varied and many times two answers are "different" but both are "correct" given the set of parameters used to compute the payment.

For instance, a loan with a \$10,000 principal amount (principal being defined as the amount upon which interest is computed), 9.5% interest rate, repayable in 36 monthly payments, a contract date of March 1, 2000 and a scheduled first payment date of April 1, 2000 can produce the following payments:

A. \$320.32	B. \$320.41	C. \$320.37
D. \$320.35	E. \$320.38	F. \$320.42

The reasons for the differences are as follows:

A. \$320.32 utilizes "month and day" time counting and computes interest for the period of "1 month" or 1/12 of a year regardless of the number of calendar days in the interval.

B. \$320.41 utilizes "actual day" time counting when computing interest for the first interval. All subsequent intervals are

presumed to be 1 month (1/12). Interest is computed for 31 days with each day using a daily rate of 1/360 of the annual rate.

C. \$320.37 also utilizes the "actual day" time counting for the first interval as above except the daily rate of interest is 1/365. That change in a key parameter produces less interest in the first interval ( $31/360 = .086111$  and  $31/365 = .084932$ ) and, thus, a slightly smaller payment.

D. \$320.35 utilizes "actual day" time counting but does not restrict it to the first interval only. Interest is computed by what we term the "per diem" method since the actual calendar days between each scheduled payment date are recognized. The daily rate for each day is 1/365 with 1/366 being used during leap year.

E. \$320.38 incorporates a 5/4 rounding parameter used with the full precision payment in illustration number three. The extended precision payment is \$320.3777.

The \$320.37 payment is truncated to two decimal places to ensure it does not exceed the stated 9.50% interest rate.

F. \$320.42 incorporates a "high" rounding parameter used in conjunction with the full precision payment in illustration number two of \$320.4134.

There are six distinct monthly payments for the same set of transactional data and we have not even begun to scratch the surface of the number of parameters that could be changed. This was a rather tame illustration since the interval between the contract date and first payment date was one calendar month. Extended first intervals (45 days, 60 days, 90 days etc.) magnify differences in parameters and the gap between possible "right" payments would widen considerably.

We also have not touched on the subject of starting with a \$10,000 "proceeds" amount and incorporating credit insurance premium calculations into the mix. An extensive whole new set of variables comes into play and must be considered.

The moral to this story is that just because payments, or insurance premiums, appear to be different for the same data, it does not necessarily mean one is "right" and the other is "wrong". Determining if the calculations are correct takes closer inspection into the parameters and presumptions that went into creating those calculations. Chances are, the only "wrong" conclusion is thinking that a single universal answer exists for a given set of transactional data.



**Carleton**  
Street-smart,  
web-savvy  
software

3975 William Richardson Dr.  
South Bend, IN 46628

800-433-0900

Fax 574-243-6060

[www.carletoninc.com](http://www.carletoninc.com)

**Carleton**

Serving consumer lending and credit insurance providers with full-service, one-stop solutions.