

MITE - MAKE INTEREST TEACHING EASY WITH CENTS-IBLE INTEREST

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Interest rates involve an abstraction - percentages - which often block student learning. The thesis of this paper is that by expressing interest rates in *Cents per \$100 per Day*, interest rates can be readily comprehended and used by students. Furthermore, students, once confident of this daily rate concept, and move on to a proper understanding of annualized formats of the nominal Annual Percentage Rate (APR) and the hypothetical Annual Percentage Yield (APY).

Cents-ible Interest [1] expresses the rate of interest in *cents* (which most students can count) *per \$100 units* (which most students can identify with *per Day* (which is universally 24 hours). Hence, the components of this rate expression are commonly used and are like the posted gasoline pump prices or unit prices of cereals and detergents in the supermarket. In fact, *Centsible Interest* would bring into the world of finance unit pricing which has been successfully used in the consumer market.

The underlying assumption is that money has a time price, usually referred to as the "Time Value of Money". Traditionally, the time unit has been the year and rates are expressed *per annum* or *per year*. Here the time unit is a *day* or *per diem*. Since a year's length is variously interpreted as 336, 348, 360, 362, 364, 365, 366, 368, 372 and $365 \frac{1}{4}$, the *per annum* concept presents tremendous problems for teachers and students which the day unit avoids. The meaning of a day needs no interpretation. Furthermore, if it is assumed that persons expect all their money in savings to earn interest every day, then the daily rate is sufficient. The only rate they need to know is the daily rate.

The daily rate, which is usually $\frac{1}{365}$ ths of the annual rate, could be difficult to understand merely because it is so small, involving long decimal places. However, by multiplying the daily percentage rate by 100, or its decimal rate equivalent by 10,000, to read in *Cents per \$100*, the problem disappears. For example, 10% per annum is .027397 per diem or 2.7397¢ per \$100. And the calculation of one day's interest is simply the *Cents-ible Interest* factor times the principal divided by 10,000. So interest earnings on \$1,000 for one day at

10% would be $\$1,000.00 \times 2.739\text{¢} \div 10,00 = \0.2739 or 27¢. Calculations using the traditional formula of $I = Prt$ would be: $\$1,000.00 \times (10 \div 100) \times (1 \div 365)$.

Teachers, sufficiently familiar with interest rate concepts, may consider translating annual rates into daily rates and vice versa a simple exercise. The relationship is so obvious, one might question whether the daily rate is necessary. Annual rates are so common, one might question whether daily rates might be confusing to students.

To test whether students would make better comparative decisions between rates expressed in *Cents-ible Interest* terms and traditional terms, a test consisting of paired choices was developed and administered to over 2,000 students by instructors in 20 states. (Note: A copy of the test used may be obtained from the author at 2429 Lookout Drive, Manhattan, KS 66502.)

Students' choices between rates expressed in Cents per \$100 per Day were correct 97 over 90 percent of the one higher than the percent identifying daily to be preferable to monthly compounding. Furthermore, the certainty score was highest for the answers given to the *Cents-ible Interest* comparisons. Thus, students not only made correct choices more frequently but had greater confidence in making those choices. The answers to the other questions posing comparisons in traditional terms were less than 50 percent; that is, not as high as would be obtained by chance selection.

A second part of the test challenged students' abilities to calculate the amount of interest that would be paid; only 25 percent answered correctly. However, 86 percent were correct in figuring interest with the rate expressed in Cents per \$100. Teachers need not devote much, if any, teaching time to Cents per \$100 for use in teaching shopping for interest. They could concentrate their efforts on teaching the effects of compounding and how to calculate interest over time. The immediate acceptability of the *Cents per \$100 per Day* form of interest rates demonstrates that with relatively little effort on the part of teachers, interest can be made sensible and useful.

The annualization of the daily rate to an APR (Annual Percentage Rate) is achieved by multiplying by 3.65. [*Cents-ible Interest* $\times 365 \div 100$]. The concept of earning interest on accrued interest can easily be demonstrated, day by day, or by applying the standard formula for future value: $FV = PV(1 + r)^n$ where n term is the number of days and the r term is the daily rate in decimals or ¢/10,000. So the interest for

two days is 5.4801¢ which is slightly more than 5.4794¢, which is $2 \times 2.7397\text{¢}$. Perhaps a simpler example would be to start with 2¢ a day and show how \$10,000 would earn \$2.00 the first day and \$2.0004 the second day...to \$757.23 in 365 days. Thus, 2¢ can be translated to 7.30% APY (Annual Percentage Yield).

The teacher with a Texas Instrument BA-35 (which retails for less than \$20 or on sale for less than \$15) can demonstrate the simplicity of interest, using *Cents-ible Interest*. Also, *Check Your Interest* tables [2] provide a multitude of tables for testing one's skills in computing interest for various numbers of days. Such inexpensive calculators eliminate the need for arduous calculations. The better students and teachers, of course, will insist on knowing the built-in algebraic formulae.

In summary, *Cents-ible Interest* holds promise of making interest approachable, understandable and useful to a larger number of students, with less effort and frustration for teachers. *Cents-ible Interest* will "Make Interest-Teaching Easy".

REFERENCES

1. Morse, Richard L. D. *Cents-ible Interest*, Family Economics Trust, 2429 Lookout Drive, Manhattan, KS 66502. \$2.00 pp.
2. Morse, Richard L. D. *Check Your Interest*, Morse Publications, 2429 Lookout Drive, Manhattan, KS 66502. \$2.50 pp.

CONSUMER COMPLAINT LETTERS: RESPONSES BY ORGANIZATIONS

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Consumer advocates and consumer educators encourage individuals to seek redress for unsatisfactory service and poor product performance. The need for consumers to take the initiative in their own interest has increased as a result of reduced governmental protection and deregulation. Effective consumer complaint resolution