

**Truth-in-Savings
Compliance Tool
615A User's Guide**

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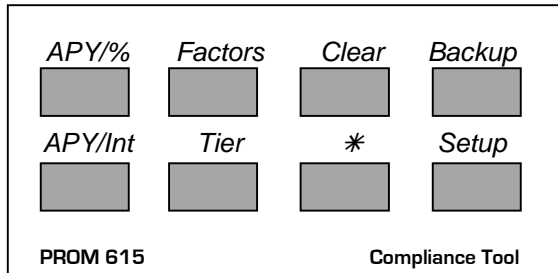
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Function Key Template



Find APY and Interest Rate - [APY/%] Function Key

This routine finds the annual percentage yield from an interest rate with any compounding interval and an optional 365/360 conversion. It will also compute the interest rate from a specified annual percentage yield.

Use this routine to convert from an interest rate to the equivalent annual percentage yield or vice versa. To compute the annual percentage yield from the interest earned, see the Find APY and Interest Paid Routine below.

Prompt

User Response

APY/RATE

Push the [APY/%] function key to start this routine.

RATE xx.xx%?_

If the interest rate shown is correct, push [ENTER], otherwise enter the correct interest rate percentage.

To compute the interest rate, enter a 0.

APY xx.xx%?_

If the annual percentage yield shown is correct, push [ENTER], otherwise enter the correct annual percentage yield.

COMP FREQ 365?_

If the compounding frequency shown is correct, push [ENTER], otherwise enter the correct compounding frequency. See Note on Compounding Frequencies.

The annual percentage yield or interest rate will be computed.

A.P.Y.	xx.xx%	Computed annual percentage yield
RATE	xx.xx%	Computed interest rate

For example, an interest rate of 5.25% compounded daily (365 times a year) converts to an annual percentage yield of 5.39% (5.3899%). If the interest rate is compounded weekly (52 times a year) instead of daily, the equivalent annual percentage yield is 5.39% (5.3875%). If an annual percentage yield is advertised as 5.80% with monthly compounding (12 times a year), the equivalent interest rate is 5.65 (5.6513%).

Find APY and Interest Paid - [APY/Int] Function Key

This routine computes the annual percentage yield for a deposit based on the amount of interest earned over a specified period and the interest to be paid based on the interest rate or annual percentage yield. For account disclosures, this routine can be used to compute the A.P.Y. (See Computing A.P.Y. for Account Disclosures.)

The interest earned and blended annual percentage yield for stepped-rate and variable-rate accounts with different interest rates at different periods can be computed.

The annual percentage yield earned for periodic statements using the average daily balance method can also be computed.

Prompt

User Response

APY/INT PAID

Push the [APY/Int] function key to start this routine.

PRIN xxxxx.xx?_

If the principal amount shown is correct, push [ENTER], otherwise, enter the correct principal amount. See also Computing the A.P.Y. for Account Disclosures below.

RATE xx.xx%?_

If the interest rate displayed is correct, push [ENTER], otherwise enter the correct interest rate.

To compute the A.P.Y. from an interest amount paid, enter a 0 at this prompt and see Computing the A.P.Y. from an Interest Amount Paid below.

Computing the Interest Amount Earned and A.P.Y.

COMP FREQ 365?_

If the compounding frequency shown is correct, push [ENTER], otherwise enter the correct compounding frequency or a 0 to indicate no compounding. See Note on Compounding Frequencies.

DAYS 365?_

If the number of days the principal is on deposit shown is correct, push [ENTER], otherwise, enter the number of days. See also Accounts with No Maturity Date below.

Push [ENTER] to view the interest earned, the total interest earned (for stepped-rate calculations), and the total number of days and annual percentage yield.

INT \$	xxxxx.xx
INT TOT	xxxxx.xx
ddddD APY	xxx.xx%

Computed interest amount
Total interest amount (see below)
Total number of days & Blended APY

(To compute a stepped-rate or variable-rate account with different interest rates during the term of the deposit, push the [Backup] key to return to the RATE xx.xx%? prompt to enter the second and succeeding rates. See examples below.)

For example, if an institution pays an interest rate of 5.77% compounded monthly (12 times per year) on a \$6500 deposit over a period of 91 days, the interest that should be paid is \$93.95 and the annual percentage yield is 5.92% (5.9248%).

As another example, if an institution pays an interest rate of 5.00% which is not compounded (use a compounding frequency of 0) on a \$10,000 deposit over a period of 181 days, the interest to be paid is \$247.95 and the annual percentage yield 5.06% (5.0631%).

Computing the A.P.Y. for Account Disclosures

This routine can be used to compute the A.P.Y. for account disclosures using the following procedure. On an account disclosure, the interest amount is not shown because, of course, the amount of the deposit is not known. Only the interest rate and A.P.Y. are disclosed (in addition to the other textual disclosures required).

To compute the A.P.Y., you must assume some deposit amount. For account disclosures where the principal amount is not known, a fairly large principal amount (\$10,000 or greater) should be used in order to compute the most accurate A.P.Y.

For example, if we compute the interest earned on a 7-day, \$500 certificate of deposit earning 3% with no compounding, we get an interest amount of \$0.29. Computing the A.P.Y., we get 3.07%. As a second example, we change the deposit amount to \$650 but leave all other terms the same. We now get an interest amount of \$0.37 and an A.P.Y. of 3.01%!

One would not expect the A.P.Y. to change, but it does because the interest amount has been rounded to the nearest whole cent (interest must be paid or credited in whole cents). The total amount of interest is so small that even adding a cent or two will make a significant change in the A.P.Y.

To properly do an account disclosure, we'll use an amount of \$10,000 which gives us an interest amount of \$5.75 and an A.P.Y. of 3.04%. Note that both of the above A.P.Y.'s of 3.01% and 3.07% are within the Regulation DD tolerance of 0.05%, and that, in fact, they are precisely correct for the actual amount of interest paid.

Computing the A.P.Y. Earned from an Interest Amount Paid

INT PD xxxxx.xx?_

If the amount of interest paid is correct, push [ENTER], otherwise, enter the correct amount of interest paid.

DAYS 365?_

If the number of days the principal is on deposit shown is correct, push [ENTER], otherwise, enter the number of days. See Accounts with No Maturity Date below.

A . P . Y .	xx . xx%
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Computed annual percentage yield

For example, if an institution would pay \$61.68 in interest on a \$1000 deposit over a period of 365 days, the annual percentage yield is 6.17% (6.1680%). If \$30.37 is paid in interest on a \$1,000 6-month certificate of deposit (actual term is 182 days), the annual percentage yield is 6.18% (6.1837%).

Stepped-Rate Accounts

The APY and Interest Paid routine can be used to find the total interest paid and annual percentage yield for stepped-rate accounts where different annual percentage yields are applied in succeeding periods. Any number of steps can be calculated.

To compute the blended annual percentage yield for a stepped-rate account, compute the interest earned during the first period by starting the routine with the [APY/Int] function key and entering a principal amount, interest rate, compounding frequency, and number of days. Then use the [Backup] key to return to the RATE xx.xx%? prompt, enter the next interest rate and the number of days that it will be in effect. The calculator will display the interest earned during this second period, the total interest earned, and the blended annual percentage yield. You can continue to use the [Backup] key as many times as necessary to compute additional periods.

For example, if an institution compounds interest daily and pays 5% for the first 91 days and 5.5% for the next 92 days on a \$1000 deposit, the total interest is \$26.68 and the blended annual percentage yield 5.39% (5.3920).

Computing the APY for Tiering Method A (Banded) Accounts

In a banded account (Tiering Method "A" in Regulation DD), interest is paid on the entire deposit amount at the rate in the particular band that the deposit amount falls. This differs from a tiering method "B" account, in that in a method "A" (banded) account the entire deposit earns interest at a single rate.

To properly disclose the annual percentage yield on this type of account, the annual percentage yield for each band must be disclosed. These can be calculated using the Find APY and Interest Rate Routine ([APY/%] function key).

For example, if the bands are:

5.25% for deposits up to \$2,500.00
5.50% for deposits between \$2,500.01 and \$10,000.00
5.75% for deposits over \$10,000

and interest is compounded daily, the respective annual percentage yields are 5.39% (5.3899%), 5.65% (5.6535%), and 5.92% (5.9180%).

Blended APY for Tiering Method B Accounts - [Tier] Function Key

This routine is used to find the blended APY for tiered accounts where an interest rate is paid only on that portion of the balance within the specified tier (Tiering Method "B" in Regulation DD). See also Computing the APY for Tiering Method "A" (Banded) Accounts. For example, an account could pay, using daily compounding,

5.25% on balances up to \$2,500.00,
5.50% on balances between \$2,500.01 and \$15,000.00, and
5.75% on balances above \$15,000.00

This routine will compute the range of annual percentage yields for each tier that must be disclosed.

You can also use this routine to compute the amount of interest earned on a deposit in a tiered account by entering the principal amount.

<u>Prompt</u>	<u>User Response</u>
BLENDED TIER	Push the [Tier] function key to start this routine.
PRIN ?_	To compute the ranges of annual percentage yields, enter a 0 and push [ENTER]. To compute the interest earned on a deposit amount, enter the deposit amount and see Finding the Interest Amount in a Tiered Account using Method "B" below.
	Enter the principal amount with a leading "-" to compute the interest amount directly (skips the following entries).
COMP FREQ 365?_	If the compounding frequency shown is correct, push [ENTER], otherwise enter the correct compounding frequency or a 0 to indicate no compounding. See Note on Compounding Frequencies.
TIER 1: xx.xx%?_	If the interest rate for the first tier is correct, push [ENTER], otherwise enter the correct interest rate.
TIER 1: \$xxxxx?_	If the <i>upper limit</i> of the first tier is correct, push [ENTER], otherwise enter the correct upper limit. In the above example, this would be \$2500.00.
TIER 2: xx.xx%?_	If the interest rate for the second tier is correct, push [ENTER], otherwise enter the correct interest rate.
TIER 2: \$xxxxx?_	If the <i>upper limit</i> of the second tier is correct, push [ENTER], otherwise enter the correct upper limit. In the above example, this would be \$15000.00. (The upper

limit must be higher than the previous tier's upper limit.)

To indicate the top tier, enter a 0 or an amount greater than the account upper limit (default is \$100,000).

Continue to enter the interest rate and upper limit for all tiers. (Up to 8 tiers can be entered.) For the top or highest tier, enter a 0 as the upper limit.

T1:	xx.xx-	xx.xx
T2:	xx.xx-	xx.xx
.		
Tn:	xx.xx-	xx.xx
UP LIM		\$xxxxxx

The range of annual percentage yields is shown for each tier.

The upper tier is assumed to end at \$100,000. (This can be changed through the Setup routine.)

In the above tiered table example with daily compounding (365 times per year), the output will be:

T1:	5.39 -	5.39
T2:	5.39 -	5.61
T3:	5.61 -	5.87
UP LIM		\$100000

Annual percentage yield range for each tier.

Upper limit of top tier.

Finding the Interest Amount in a Tiered Account using Method B

If a principal amount was entered at the PRIN? prompt above, the next prompt will appear allowing you to enter the number of days that the amount is on deposit. The total interest earned and annual percentage yield for this deposit amount is then computed.

To jump directly to this prompt, enter the principal amount with a leading "-" sign. (You must have already entered the tiered table to use this feature.)

DAYS 365?_

If the number of days is correct, push [ENTER], otherwise enter the number of days.

INT \$	xxxxx.xx
A.P.Y.	x.xx%

The interest earned on the deposit and annual percentage yield.

In the above tiered table example with daily compounding (365 times per year), a principal balance of \$17,500, and a term of 365 days, the interest earned is \$989.40 and the annual percentage yield 5.65% (5.6537%).

Clear Routine - [Clear] Function Key

The [Clear] function key can be used to clear the data for all the routines. Normally, when you start a routine it will "remember" the previous data enabling you to review and edit a previous calculation. Use the [Clear] function key to clear this data.

This key is also used to clear the INT TOT field in the Find Interest Paid and APY routine. The INT TOT field is used to accumulate the total interest paid in a stepped-rate account (See Stepped-Rate Account).

Equivalent Future Rate (EFR) Routine - Star [*] Function Key

This routine performs a comparison between two time deposits of different lengths and rates. The two options are called "shorter" and "longer". This routine computes the interest rate that the depositor would have to earn at the end of the shorter option in order to receive the equivalent amount of interest as he or she would by taking the longer option.

For example, assume a depositor is trying to decide between a \$10,000.00, 91-day certificate of deposit with a rate of 5.00%, and a 365-day certificate with a rate of 5.25%. (Daily compounding is used for this example.)

If the depositor elects the longer term option with the 5.25% rate, he will earn \$538.99 in interest over 365 days. For the shorter term with the 5.00% rate, he will earn \$125.43 over 91 days.

At the end of the 91 days, the depositor will purchase a new certificate in the amount of \$10,125.43 for the next 274 days (the total term being the same as the longer option term of 365 days). In order to be in the same financial position at the end, he will need to earn an additional \$413.56 in interest ($\$538.99 - \$125.43 = \413.56).

The EFR routine computes the interest rate that would have to be in effect for the 274-day period in order for the depositor to earn the required additional \$413.56 in interest. This rate is 5.3330%. Of course, no one really knows what the future interest rates will be. However, being able to calculate the equivalent future rate may help a depositor in making the choice between a shorter and longer term deposit.

Stated another way, if the rate at the end of the 91-day period happens to be exactly 5.3333%, it doesn't matter which option the depositor takes: both will earn the same amount of interest at the end of the 365-day period. If the interest rate at the end of the 91-day period happens to be greater than 5.3330%, the depositor would earn more interest over the one-year period by electing the shorter term option. On the other hand, if the rate is less than 5.3330%, the depositor would earn more interest by taking the longer term option.

In the above example and the one that follows on the next page, we have set the calculator to display results to four decimal places for greater accuracy. Using four decimal places, the equivalent interest amounts will agree within a few cents.

Prompt**User Response**

EFR/DAYS 1/2? x	Enter a "1" to run the EFR routine.
COMP FREQ 365?_	If the compounding frequency shown is correct, push [ENTER], otherwise enter the correct compounding frequency or a 0 to indicate no compounding. See Note on Compounding Frequencies.
SHORT % x.xxx?_	Enter the interest rate for the shorter term option.
SHORT # DAYS xxx?_	Enter the number of days the amount will be on deposit for the shorter term option.
LONG % x.xxx?_	Enter the interest rate for the longer term option. (This can be higher or lower than the shorter option interest rate.)
LONG # DAYS xxx?_	Enter the number of days the amount will be on deposit for the longer term option. (This must be at least 1 day longer than the number of days in the shorter option.)

EFR	x.xx%
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Equivalent future rate (see text)

Equivalent Future Rate Example

Assume a depositor is considering a 1-year (365 days) certificate at 4.171% and a 3-year (1095 days) certificate at 5.622%. Daily compounding is used and the deposit amount is \$10,000.

Using the EFR routine, we calculate an equivalent future rate of 6.35% (6.3475%). To understand the significance of this future rate, we calculate the interest earned over the 3-year period by both options using the Truth-in-Savings Compliance Tool. For greater accuracy, we'll enter the full 4-digit computed interest rate of 6.3475% in the routines.

First, we calculate the longer term option interest using the long-term rate of 5.622% and daily compounding. Using the [APY/Int] function key, we get a long-term interest amount of \$1837.02.

Second, we calculate the shorter term option interest using the short-term rate of 4.171% and the [APY/Int] function key again, getting a short-term interest amount of \$425.90.

At the end of the shorter term, we assume the depositor is going to purchase a new certificate at the computed rate of 6.3475%. The deposit amount is \$10,425.90, which includes the original \$10,000 plus the \$425.90 interest earned during the first year. (We assume the interest is reinvested on the short-term option because it is, of

course, not available in the long term option until the end.) Using the [APY/Int] function key, a term of 2 years (730 days), and an interest rate of 6.3475% (the computed equivalent future rate), we get an interest amount of \$1411.12.

Adding the short-term interest amount of \$425.90 to the \$1411.12, we get a total interest amount of \$1837.02. Thus, if the future rate happens to be exactly 6.3475% at the end of the first year, the short-term and long-term options will earn an equivalent amount of interest.

Find the Number of Days Between Dates - Star [*] Function Key

<u>Prompt</u>	<u>User Response</u>
EFR/DAYS 1/2? X	Enter a "2" to compute the number of days between two dates.
DATE-1 MMDDYY?_	Enter the first date as <i>mmddy</i> , e.g., March 5, 1996 as 030596.
DATE-2 MMDDYY?_	Enter the second date in the same format.

Date entries with a 'yy' of 19 or less are considered to be in the 21st century, e.g., 121219 is Dec 12, 2019 and 121220 is Dec 12, 1920.

XXXX DAYS

The number of days between the dates

If the number of days is negative, DATE-1 is after DATE-2.

Entering Terms Over One Year

To calculate accounts over one year in length, you have to enter the total number of days in the term, e.g., you would enter 730 for a two-year term. You can enter the number of years, the "X" key, and "365" (e.g., you could enter "2 X 365" for a two-year term) instead of entering the total number of days at the "# DAYS?_" prompt. The calculator will perform the multiplication and enter the total number of days.

Year 2000 Compliant

The date routines in this program will correctly calculate dates for the Year 2000 and beyond. Dates are entered in a 'mmddy' format using 6 digits, with the last two 2 digits reserved for the year. The span of dates that can be entered is from '010120' through '123119' (January 1st, 1920 through December 31st, 2019). Thus a date entry of 010100 represents January 1, 2000.

Find Accrual Factors and APY - [Factors] Function Key

This routine finds the periodic crediting factor used to compute the earned interest for a crediting period of any length as well as the daily crediting factor. The daily factor is applied to the average daily balance for each day in the crediting cycle to compute the interest.

The annual percentage yield can also be found from a known crediting period factor or daily factor.

Prompt

User Response

FACTORS

Push the [Factors] function key to start this routine.

DAYS/CYCLE xx?_

If the number of days in the crediting cycle is correct, push [ENTER], otherwise enter the correct number of days.

RATE xx.xxxx%?_

If the interest rate displayed is correct, push [ENTER], otherwise enter the correct interest rate.

Alternatively, you may enter the annual percentage yield at this prompt but if you do so, make sure to specify a compounding interval of 1 at the next prompt.

To find the annual percentage yield, enter a 0 at this prompt and see Finding the APY from Periodic or Daily Factors below.

COMP FREQ 365?_

(Appears if computing factors from an interest rate.) If the compounding frequency shown is correct, push [ENTER], otherwise enter the correct compounding frequency or a 0 to indicate no compounding. See Note on Compounding Frequencies.

ddD: x.xxxxxxxxx
DLY: .xxxxxxxxxxxx

Periodic crediting factor

Daily crediting factor

The "dd" above represents the number of days in the crediting cycle.

As an example, assume there are 33 days in an interest crediting cycle, the interest rate is 5.20% compounded monthly (12 times/year). The periodic factor is 0.00470223 and the daily factor is 0.0001424919.

Finding the APY from Periodic or Daily Factors

FTR (ddd)?_ Enter the periodic factor. This is the factor that would be used to credit interest at the end of the number of days specified above at the DAYS/CYCLE prompt. (The number of days is shown within the parentheses.)

If you want to find the annual percentage yield from the daily factor, enter a 0 at this prompt.

DLY FTR?_ (Appears only if you entered a 0 at the previous prompt.)
Enter the daily factor. This is the factor that would be applied to the daily balance during each day within the interest crediting cycle specified above at the DAYS/CYCLE prompt.

A . P . Y .	xx . xx%
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The equivalent annual percentage yield.

For example, assume there are 33 days in the crediting cycle and that the daily factor is 0.0001424919. The annual percentage yield is 5.33% (5.3257%). By using the Find APY and Interest Rate routine ([APY/%] function key), we can convert this annual percentage yield back to the nominal rate of 5.20% if we assume it is compounded monthly (12 times per year).

Periodic Crediting Factors

The periodic crediting factor is the factor applied to a principal amount at the end of the crediting period to compute the correct amount of interest to be credited. This factor can be used on accounts where the balance does not change during the crediting cycle.

For example, a \$10,000 deposit for 182 days at an interest rate of 5.5% compounded daily (annual percentage yield of 5.65%) (5.6536%) would earn \$278.02 in interest. The periodic crediting factor is 0.02780205.

As another example, the interest can be credited to an account at the end of each statement cycle based on the balance at the end of the cycle. Using the above 5.5% interest rate compounded continuously (enter 500, or any number greater than 366, at the COMP FREQ? prompt), a deposit of \$10,000.00, and a statement cycle of 34 days, the periodic crediting factor would be 0.00513643. We can manually calculate the interest to be credited at the end of this 34-day period as \$51.36 by multiplying the principal balance of \$10,000 by 0.00513643.

Daily Crediting Factors

The daily crediting factor is the factor applied to the daily balance of a deposit account each day within a specified statement cycle to generate the correct amount of interest to be credited at the end of the cycle. The daily crediting factor is used by many

accounting systems for statement savings accounts and other accounts where the deposit balance can vary from day to day.

In the above example with a 34-day crediting cycle and 5.5% interest rate compounded continuously, the daily crediting factor is 0.0001510716 which would be applied to the \$10,000 balance to compute the daily interest for each day in the 34-day statement cycle. Assuming the \$10,000.00 balance doesn't change during the 34-day period, this factor generates a daily interest amount of \$1.510716, and a total statement-cycle interest of \$51.36 (34 x 1.510716).

As another example, assume the initial \$10,000 balance stays unchanged for the first 9 days, rises to \$11,300 for the next 14 days, and then falls to \$5,100 for the remaining 11 days. The interest amount to be credited at the end of the 34 day cycle is \$45.97 (0.0001510716 x (9 x 10,000 + 14 x 11,300 + 11 x 5,100)). (An alternative way to compute this is to find the average daily balance (\$8950.00) and multiply it by the periodic crediting factor found above (0.00513643) to compute the interest to be credited at the end of the cycle (8950 x 0.00513643 = \$45.97).

Accounts with No Maturity Date

If an account has no maturity date, annual percentage yield calculations should be done on the basis of 365 days. (Use of 366 days is acceptable in a leap year.)

Note on Compounding Intervals and Frequencies

The 615A program requests the compounding frequency in its routines to compute the annual percentage yield and interest amounts. The compounding frequency is the number of times per year that the interest is compounded, e.g., daily compounding has a compounding frequency of 365 or 366 (in leap years).

Regulation DD uses the term compounding in some examples to mean the compounding interval in days, e.g., for daily compounding, the compounding interval is 1 day. You should use the compounding frequency in the 615A routines and not the compounding interval.

The 615A program accepts compounding frequencies of: 1, 2, 4, 6, 12, 13, 24, 26, 52, 365 & 366 times per year. If a compounding frequency greater than 366 is entered, continuous compounding is used. If a compounding frequency of 0 is entered, the interest is not compounded.

When computing the interest amount with a compounding frequency of 0, the interest is computed at the end of the term. If the term is 1 year, a compounding frequency of 0 is the same as a compounding frequency of 1.

In any of the routines in this program, you can enter the annual percentage yield directly (instead of the interest rate). Enter the annual percentage yield at the RATE prompt and enter a compounding frequency of 1 (indicating that the entry is compounded annually).

Annual Percentage Yield Earned for Periodic Statements

Use the Find APY and Interest Paid [APY/Int] Routine to compute the annual percentage yield for periodic statements based on the amount of interest actually earned on the customer's account during the statement period (or some other period) and the average daily balance during that period.

The calculation involves computing the average daily balance for the period and then using this routine to compute the annual percentage yield.

For example, if an account had a balance of \$1500 for the first 15 days and of \$500 for the remaining 15 days of a 30-day period, the average daily balance during the 30-day period is \$1000. If the interest earned at the end of the 30-day period is \$5.25, the annual percentage yield is calculated at 6.58% (6.5781%).

As another example, assume that an institution credits \$21 interest earned on an account at the end of 91 days which had a balance of \$1000 for the first 30 days, \$2000 for the next 31 days, and \$3000 for the last 30 days. The average daily balance is \$2,000, and the annual percentage yield 4.28% (4.2786%).

Variable-Rate Accounts

For variable rate accounts without an introductory premium or discounted interest rate, the annual percentage yield is based on the initial interest rate in effect when the account is opened or advertised. If no term is specified for the account, it is assumed that this rate will not change for a year.

If a variable-rate account has an introductory premium or discount interest rate, it must be treated like a stepped-rate account (see above). Again, if no term is specified for the account, it is assumed to mature in one year.

For example, assume an interest rate of 7% is advertised for the first three months on an account when the rate would normally be 5%. The interest rate is compounded daily and there are 91 days in the first three-month period. To compute the blended annual percentage rate that must be advertised, we assume a deposit amount of \$1000. Using the [APY/Int] function key, we find that the interest earned during the first three months is \$17.60. Now, using the [Backup] key, we return to the RATE xx.xx%? prompt and enter the "normal" rate of 5% and a term of 274 days (365 - 91 = 274). The interest earned during this 274-day period is \$38.92, the total interest earned during the 365-day period is \$56.52, and the blended annual percentage yield 5.65% (5.6520).

Formula to Compute Interest Using Daily Compounding

Regulation DD contains several examples which use daily compounding but it does not actually contain the formula for daily compounding. We have included it here to assist you in computing the Regulation DD examples manually, if you desire.

Literally, daily compounding means that interest is computed every day and added to the principal amount. In practice, the interest is computed at the end of (or at some interval during) the deposit period using the formula below.

The "^" symbol that appears in the formula below means to raise to the power. The expression 2^3 means to raise the number 2 to the 3rd power, i.e., to multiply 2 by itself three times ($2 \times 2 \times 2 = 8$).

In calculating the interest using daily compounding on a deposit, you will either need a scientific calculator which will perform the power function (sometimes called the "y^x" or y-to-the-x-power function) with a single key, or you will have to perform all the multiplications manually (not easily done with accuracy for periods of more than a few days). You should consult the instructions for the particular scientific calculator you are using to determine the proper use of the power function key. The terms used below are defined as:

rate	the interest rate percentage, e.g., 5.5
no_days	the number of days the amount is on deposit
principal	the deposit amount

```
let    A = 1 + (rate / 36500)
then  interest = ((A ^ no_days) - 1 ) x principal
```

Example:

A \$10,000 deposit for 182 days at an interest rate of 5.5% compounded daily:

```
A = 1 + (5.5 / 36500)
  = 1.000150685

interest = ((1.000150685 ^ 182) - 1 ) x 10000
          = (1.027802064 - 1 ) x 10000
          = 0.027802064 x 10000
          = 278.02064
          = 278.02          (rounded to the nearest cent)
```

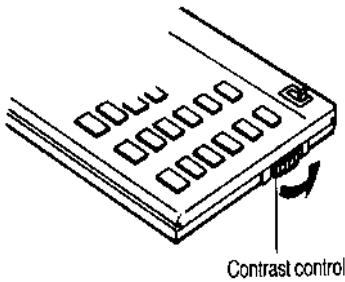
By comparison, if we calculate the interest without any compounding, the formula is:

```
interest = rate / 36500 x no_days x principal
          = 5.5 / 36500 x 182 x 10000
          = 274.24657
          = 274.25          (rounded to the nearest cent)
```

Thus, the deposit would earn an additional \$3.77 ($\$278.02 - \$274.25 = \3.77) because of the effect of daily compounding.

Battery Replacement & Maintenance

Adjusting the Display Contrast



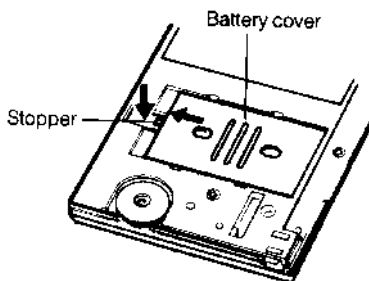
The calculator is equipped with a control to adjust the contrast of the LCD (liquid crystal display). While looking at the display from a position about 70 degrees above the keyboard, first increase the contrast until black squares are clearly visible behind the characters and then decrease the contrast slowly until the squares just disappear.

If the display contrast becomes too dim, the batteries should be replaced.

Battery Replacement

To replace the batteries, you should first have replacement batteries at hand. Two lithium type CR2032 batteries and a small screwdriver are required.

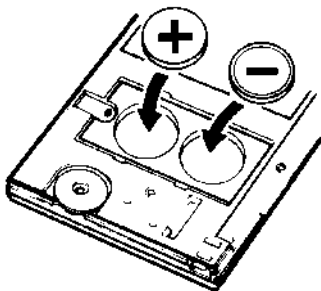
1) Make sure the calculator is turned off. Place the calculator face down on a table with the contrast control in the upper left-hand corner (the writing on the back of the calculator will be right side up).



2) Remove the Software Cartridge from the calculator.

3) Using a small screwdriver, remove the two screws holding the back. While lifting the edge of the calculator's back cover closest to you, slide it up to remove it.

4) Slide the silver-colored battery compartment cover upwards to open the compartment; remove the cover. The batteries are now disconnected; remove and discard them.



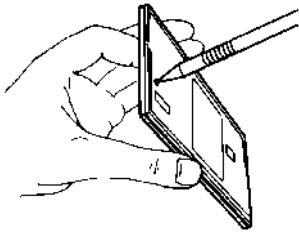
5) Install the new batteries, making sure the polarity (+ and -) is correct, and replace the battery compartment cover. (Make sure to replace the battery compartment cover--the batteries are not connected unless the battery compartment cover is in place.) Replace the back of the calculator by first hooking the 3 tabs on the top and then lowering the edge closest to you so you can replace the 2 screws.

6) Replace the Software Cartridge in the calculator. If it has been out of the calculator for more than about 5 minutes, you will have to initialize it. See below.

Initializing the Software Cartridge

After replacing the batteries or if you remove the Software Cartridge from the calculator, you may need to initialize the Software Cartridge with the following steps.

Software Cartridges have a label on the back side (the side that faces the calculator) which has instructions similar to the following.)



1) Install the Software Cartridge in the calculator. With a pencil or straightened paper clip and the calculator ON, push the "ALL RESET" button on the left side of the back of the calculator. You should see 4 stars in the display (2 on the left, 2 on the right). (On some calculators, there may be a white label over the "ALL RESET" button. If so, gently lift up the lower left corner to reveal it)

2) Push [ENTER]. You should now see a single star at the right edge of the display.

3) Turn the calculator off, wait a few seconds, and then turn it back on. You should see "0." in the display. The calculator is now ready to be configured.

4) Push the [Setup] key. You should see "CONFIGURING. . ." appear for a moment.

Setup Routine - [Setup] Function Key

The [Setup] function key accesses several setup routines to configure the calculator. All are started by pushing the [Setup] key and then entering the appropriate code number.

This function key is used to initialize the calculator and to enable the optional 365/360 interest rate conversion feature.

Prompt

CODE?_

User Response

Enter the appropriate code number shown below.

Enabling the 365/360 Conversion Option on the [APY/%] Function Key

Code = 365

Enter this code number to select the 365/360 option.

USE 365/360 N?_

If you want to enable the option of converting interest rates on a 365/360 basis in the Find APY and Interest Rate routine, push [YES], otherwise push [NO].

If you respond [YES], the prompt "365/360 Y/N? N" will appear in the Find APY and Interest Rate routine.

(If you respond yes to this latter prompt, the interest rate will be increased by the ratio 365/360 before being converted to the annual percentage yield at the specified compounding frequency.)

Changing the Upper Limit of the Top Tier

In the Blended APY for Tiered Accounts, the program assumes that the upper limit of the top tier is \$100,000. This upper limit can be changed to any amount by using this routine.

Code = 99 Enter this code number to change the upper limit of the top tier.

UL 100000?_ If the upper limit shown is correct, push [ENTER], otherwise enter the desired upper limit amount.

Changing the Calculation Precision from 2 to 4 Places

Regulation DD specifies that the interest rate, A.P.Y., and A.P.Y. earned shall be rounded to the nearest one-hundredth of one percentage point (0.01%) and expressed to two decimal places. For account disclosures only, the interest rate can be expressed to more than two decimal places. If you want to change the calculation precision to 4 decimal places in the calculator, you can enter a code of 4 in the Setup routine.

Code = 4 or 2 To change the calculation precision to 4 places, enter a "4" and push [ENTER]. To restore the precision to 2 places, enter a "2".

Initializing the Program

The program will automatically initialize itself when the Software Cartridge is first installed in the calculator. Make sure to follow the instructions in Initializing the Software Cartridge when reinstalling the Software Cartridge.

You can initialize the program at any time by entering this code number.

code = 615 Enter this code to initialize the program.