Solving a Literal Equation Using the Equation Method (Amortization)

The Solver mode is used to solve one unknown variable by inputting known variables, by three methods: Equation, Newton's, and Graphic. The Equation method is used when an exact solution can be found by simple substitution.


Example

Solve an amortization formula. The solution from various values for known variables can be easily found by giving values to the known variables using the Equation method in the Solver mode.

The formula : $P = L \left[\dfrac{1-(1+ \frac{I}{12})^{-N}}{I \: / \: 12} \right]^{-1}$

P= monthly payment I= interest rate
L= loan amount N=number of months

1. Find the monthly payment on a $15,000 car loan, made at 9% interest over four years (48 months) using the Equation method.

2. Save the formula as "AMORT".

3. Find amount of loan possible at 7% interest over 60 months with a $300 payment, using the saved formula.

Before Starting There may be differences in the results of calculations and graph plotting depending on the setting. Return all settings to the default value and delete all data.

Step & Key Operation	*Display*	*Notes*
*Use either pen touch or cursor to operate.		

1-1 Access the Solver feature.

`2nd F` `SOLVER`

This screen will appear a few seconds after "SOLVER" is displayed.

1-2 Select the Equation method for solving.

`2nd F` `SOLVER` `A` *

`1` *
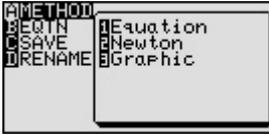
1-3 Enter the amortization formula.

`2nd F` `SOLVER` `P` `=` `L` `ALPHA`

`(` `a/b` `1` `—` `(` `1` `+`

`ALPHA` `1` `a/b` `1` `2` `▶` * `)`

`aᵇ` `(-)` `ALPHA` `N` `▶` `▶` *

`ALPHA` `I` `÷` `1` `2` `▶` * `)`

`aᵇ` `(-)` `1`

$P = L \left(\dfrac{1-\left(1+\frac{I}{12}\right)^{-N}}{I/12} \right)^{-1}$

SHARP
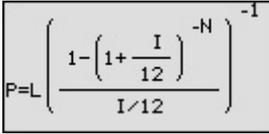
Step & Key Operation	*Display*	*Notes*

Use either pen touch or cursor to operate.

1-4 Enter the values L=15,000, I=0.09, N=48.

`ENTER` `▼`* `1` `5` `0` `0` `0`

`ENTER`* `•` `0` `9` `ENTER`* `4`

`8` `ENTER`

```
Solver:Equation
P=0
L=15000
I=.09
N=48
```

1-5 Solve for the payment(P).

`▲` `▲` `▲`* `2nd F` `EXE`

(`CL`)

```
Equation solver
P=373.2756356
```

The monthly payment (P) is $373.28.

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2-1 Save this formula.

`2nd F` `SOLVER` `C`* `ENTER`*

```
AMETHOD
BEQTN
CSAVE
DRENAME

     Press[ENTER]
```

2-2 Give the formula the name AMORT.

`A` `M` `O` `R` `T` `ENTER`

```
TITLE:AMORT
```

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3-1 Recall the amortization formula.

`2nd F` `SOLVER` `B`*

`0` `1`*

```
AMETHOD
BEQTN   01AMORT
CSAVE
DRENAME
```

3-2 Enter the values: P = 300, I = 0.01, N = 60

`ENTER` `3` `0` `0` `ENTER` `0` `ENTER`*

`•` `0` `1` `ENTER`* `6` `1` `ENTER`

```
Solver:Equation
P=300
L=0
I=0.01
N=60
```

3-3 Solve for the loan (L).

`▲` `▲`* `2nd F` `EXE`

```
Equation solver
L=17550.27685
```

The amount of loan (L) is $17550.28.

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With the Equation Editor, the EL-9650/9600c displays equations, even complicated ones, as they appear in the textbook in easy to understand format. Also it is easy to find the solution for unknown variables by recalling a stored equation and giving values to the known variables in the Solver mode when using the EL-9650/9600c.

SHARP