



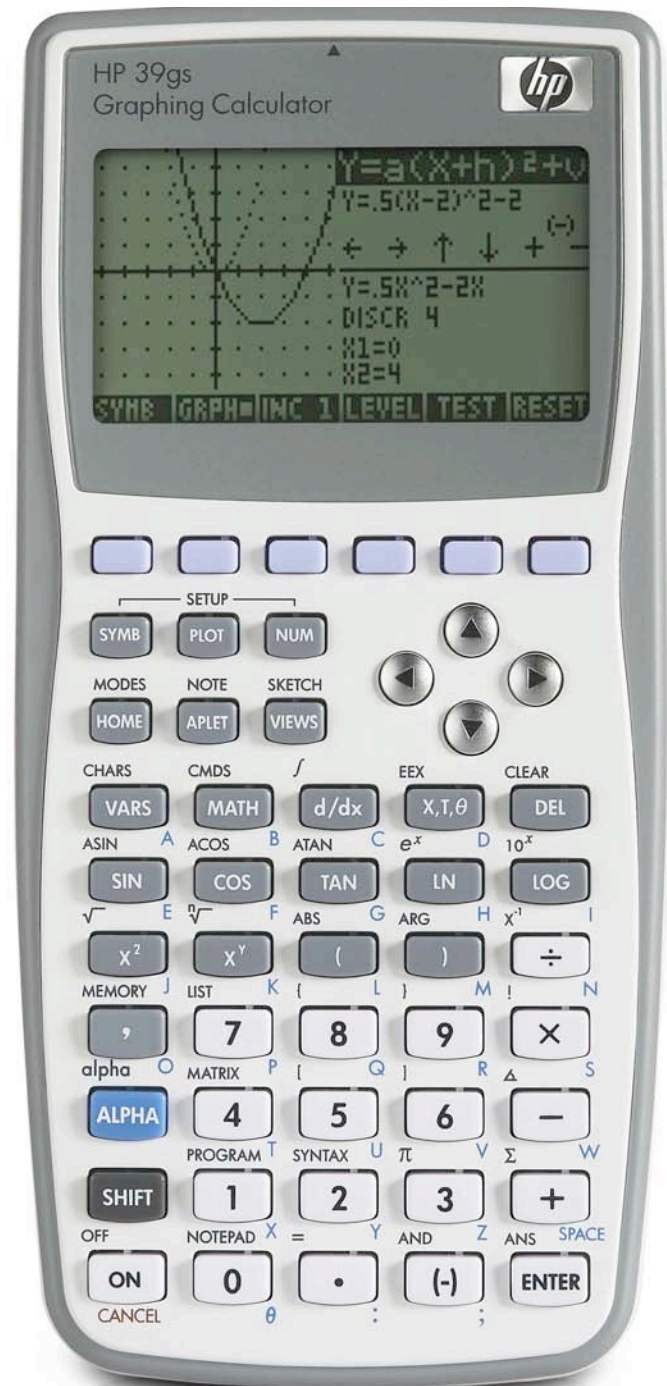
hp calculators

HP 39gs Remaining Loan Balance

The FINANCE aplet

Remaining Loan Balance

Practice solving loan remaining balance problems



The FINANCE aplet

The HP 39gs has a financial solver aplet built into the calculator. To access this aplet, press $\boxed{\text{APLET}}$. Scroll down the list using the \odot key until "Finance" is highlighted in the display as shown below.



Figure 1

Press $\boxed{\text{ENTER}}$ to begin the aplet. A data entry form is then displayed that is used to solve a number of financial math problems.

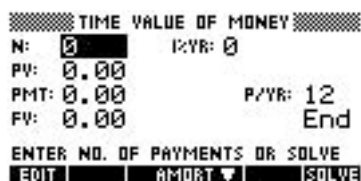


Figure 2

To solve problems using this display, move the cursor using the \leftarrow , \uparrow , \downarrow , \rightarrow keys to each field and input its value, if known. To solve for the unknown value, move the cursor to the field for which you wish to solve, and press menu key labeled $\boxed{\text{MENU}}$. The value of the unknown will be calculated and displayed in the field. Note: If you enter the aplet and values are already present in some of the fields, you can clear these values to their default state by pressing the $\boxed{\text{SHIFT}}$ key and then $\boxed{\text{DEL}}$, to access the $\boxed{\text{CLEAR}}$ function written above it.

Several values are already present on this screen. The number of payments per year is set to 12 for monthly compounding, as shown to the right of the P/YR: in the screen above. If annual compounding is desired, this value should be changed to 1. If quarterly compounding is desired, this value should be changed to 4. Just below the P/YR: field, the calculator displays the word END, signifying that payments are assumed to occur at the end of each period, which would be the case for ordinary annuities. If payments are desired at the beginning of the period, as would be the case in an annuity due, this value can be changed by moving the cursor to this field. When the cursor is on this field, $\boxed{\text{MENU}}$ is displayed above the second menu key, indicating the calculator will supply a list of choices (Begin or End) in a small CHOOSE box if this key is pressed. Note that Begin will be displayed as Beg if chosen. To exit from this data entry screen, press a key that starts another function.



Figure 3

The HP 39gs Financial solver follows the standard convention that money in is considered positive and money out is negative.

Remaining Loan Balance

Once a loan payment has been determined, the financial solver can be used to determine the remaining balance. Since each payment has a portion that pays interest due and a portion that reduces the outstanding loan balance, the computed Future Value (FV) at any point in the life of the loan will be the amount remaining to be paid on the loan balance.

Practice solving remaining loan balance problems

Example 1: Ralph bought a car for \$18,995. He will pay for the car with a 4.5%, compounded monthly loan that will have 48 payments. After he has made 12 payments, how much does he still owe on the loan?

HP 39gs Remaining Loan Balance

Solution: **APLET** (press ∇ until the "Finance" aplet is highlighted) **TIME**
 $\boxed{4}\boxed{8}\boxed{\text{ENTER}}\boxed{4}\boxed{\cdot}\boxed{5}\boxed{\text{ENTER}}\boxed{1}\boxed{8}\boxed{9}\boxed{9}\boxed{5}\boxed{\text{ENTER}}\boxed{0}\boxed{\text{ENTER}}\boxed{1}\boxed{2}\boxed{\text{ENTER}}\boxed{0}\boxed{\text{ENTER}}\leftarrow\rightarrow\boxed{\text{TIME}}$
 (Ralph's payment of \$433.15 is displayed).

```

TIME VALUE OF MONEY
N: 48      I/YR: 4.5
PV: 18,995.00
PMT: -433.15  P/YR: 12
FV: 0.00      End
ENTER PAYMENT AMOUNT OR SOLVE
EDIT      AMORT  SOLVE
  
```

Figure 4

Then press $\leftarrow\rightarrow\boxed{1}\boxed{2}\boxed{\text{ENTER}}\rightarrow\leftarrow\rightarrow\boxed{\text{TIME}}$

```

TIME VALUE OF MONEY
N: 12      I/YR: 4.5
PV: 18,995.00
PMT: -433.15  P/YR: 12
FV: -14,561.24  End
ENTER FUTURE VALUE OR SOLVE
EDIT      AMORT  SOLVE
  
```

Figure 5

Answer: After making 12 payments, Ralph still owes \$14,561.24 on his loan.

Example 2: Julie bought a house for \$255,000 and is paying for it with a 30-year loan with an interest rate of 5.5%, compounded monthly. After she has made 72 payments, how much does she still owe on the loan?

Solution: **APLET** (press ∇ until the "Finance" aplet is highlighted) **TIME**
 $\boxed{3}\boxed{6}\boxed{0}\boxed{\text{ENTER}}\boxed{5}\boxed{\cdot}\boxed{5}\boxed{\text{ENTER}}\boxed{2}\boxed{5}\boxed{5}\boxed{0}\boxed{0}\boxed{0}\boxed{\text{ENTER}}\boxed{0}\boxed{\text{ENTER}}\boxed{1}\boxed{2}\boxed{\text{ENTER}}\boxed{0}\boxed{\text{ENTER}}\leftarrow\rightarrow\boxed{\text{TIME}}$
 (Julie's payment of \$1,447.86 is displayed).

```

TIME VALUE OF MONEY
N: 360     I/YR: 5.5
PV: 255,000.00
PMT: -1,447.86  P/YR: 12
FV: 0.00      End
ENTER PAYMENT AMOUNT OR SOLVE
EDIT      AMORT  SOLVE
  
```

Figure 6

Then press $\leftarrow\rightarrow\boxed{7}\boxed{2}\boxed{\text{ENTER}}\rightarrow\leftarrow\rightarrow\boxed{\text{TIME}}$

```

TIME VALUE OF MONEY
N: 72      I/YR: 5.5
PV: 255,000.00
PMT: -1,447.86  P/YR: 12
FV: -231,254.99  End
ENTER FUTURE VALUE OR SOLVE
EDIT      AMORT  SOLVE
  
```

Figure 7

Answer: After making 72 payments, Julie still owes \$231,254.99 on her loan.


Example 3: Howard bought a house for \$163,000 and is paying for it with a 15-year loan at 5.25%, compounded monthly. After he has made payments for 10 years, how much does he still owe on the loan?

Solution: **APLET** (press ∇ until the "Finance" aplet is highlighted) **TIME**
 $\boxed{1}\boxed{8}\boxed{0}\boxed{\text{ENTER}}\boxed{5}\boxed{\cdot}\boxed{2}\boxed{5}\boxed{\text{ENTER}}\boxed{1}\boxed{6}\boxed{3}\boxed{0}\boxed{0}\boxed{0}\boxed{\text{ENTER}}\boxed{0}\boxed{\text{ENTER}}\boxed{1}\boxed{2}\boxed{\text{ENTER}}\boxed{0}\boxed{\text{ENTER}}\leftarrow\rightarrow\boxed{\text{TIME}}$
 (Howard's monthly payment of \$1,310.32 is displayed).

```

TIME VALUE OF MONEY
N: 180      I/YR: 5.25
PV: 163,000.00
PMT: -1,310.32  P/YR: 12
FV: 0.00      End
ENTER PAYMENT AMOUNT OR SOLVE
EDIT  AMORT  SOLVE
    
```

Figure 8

Then press $\Delta \Delta$ 1 2 0 ENTER $\Delta \nabla \nabla$ 

```

TIME VALUE OF MONEY
N: 120      I/YR: 5.25
PV: 163,000.00
PMT: -1,310.32  P/YR: 12
FV: -69,015.16  End
ENTER FUTURE VALUE OR SOLVE
EDIT  AMORT  SOLVE
    
```

Figure 9

Answer: After making 120 payments, Howard still owes \$69,015.16 on his loan.