



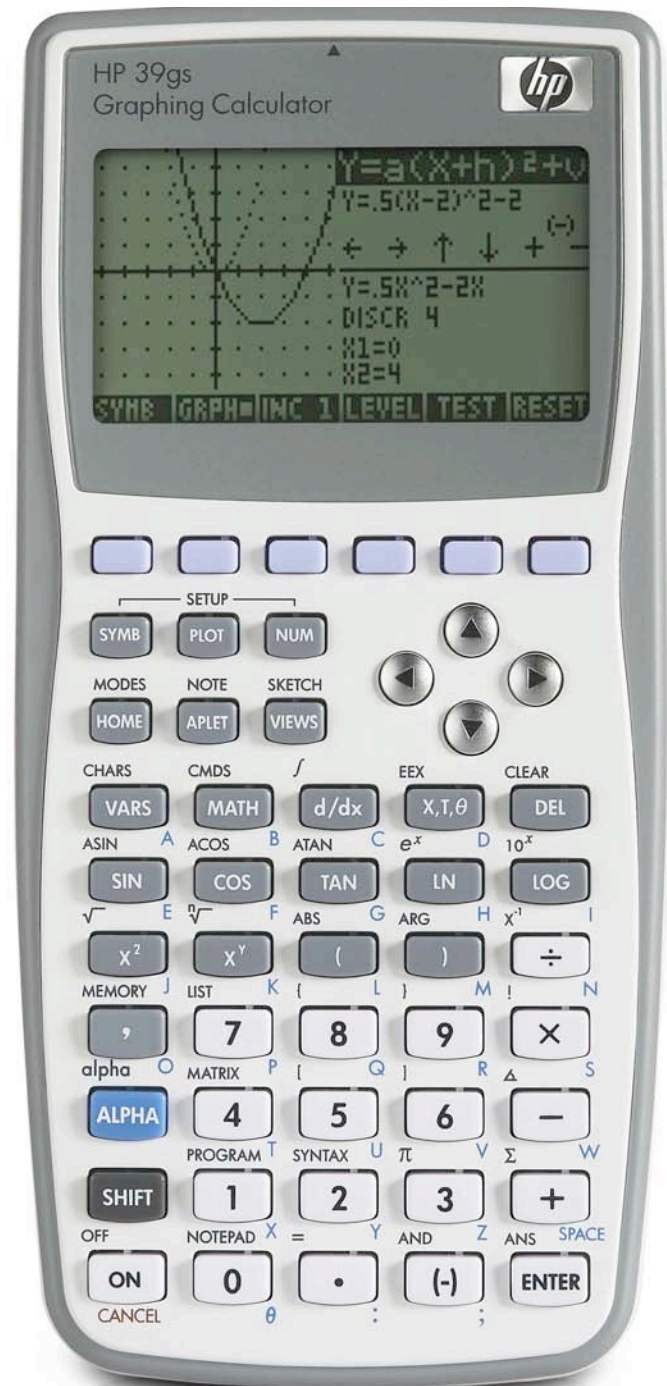
hp calculators

HP 39gs Return on Investment

The FINANCE aplet

Return on Investment

Practice solving return on investment 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 \downarrow 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.

Return on Investment

Return on investment, or ROI, involves determining the interest rate that makes the value of future cash flows equal to the initial investment. This interest rate indicates the return received on the initial deposit or investment. In other situations, this same calculation would result in a value called the Internal Rate of Return or IRR.



Practice solving return on investment problems

Example 1: An asset is purchased for \$10,000 which will generate cash flows of \$2,000 a year for 5 years. The asset will be sold for \$3,500 after these 5 years are over. What is the return on investment for this purchase?

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HP 39gs Return on Investment

Solution:

APLET (press ∇ until the "Finance" aplet is highlighted) 
5 ENTER \rightarrow (+) 1 0 0 0 0 ENTER 2 0 0 0 ENTER 1 ENTER 3 5 0 0 ENTER
 \rightarrow \rightarrow 



```
TIME VALUE OF MONEY
N: 5      I%YR: 9.177...
PV: -10,000.00
PMT: 2,000.00   P/YR: 1
FV: 3,500.00    End
ENTER YEARLY INT RATE OR SOLVE
EDIT AMORT SOLVE
```

Figure 4

Answer: The investment will generate a return of 9.177% per year.

Example 2: John is considering investing in a restaurant. The initial investment would be \$50,000. Forecasted income to John would be \$5,000 per year. If John were to follow through with this investment for the 7 year period and then sell his interest for \$80,000, what would be his return on investment?

Solution:

APLET (press ∇ until the "Finance" aplet is highlighted) 
7 ENTER \rightarrow (+) 5 0 0 0 0 ENTER 5 0 0 0 ENTER 1 ENTER 8 0 0 0 0 ENTER
 \rightarrow \rightarrow 

```
TIME VALUE OF MONEY
N: 7      I%YR: 15.36...
PV: -50,000.00
PMT: 5,000.00   P/YR: 1
FV: 80,000.00   End
ENTER YEARLY INT RATE OR SOLVE
EDIT AMORT SOLVE
```

Figure 5

Answer: The investment will generate a return of 15.36% per year.

Example 3: Mark is considering buying a copying machine to put in the lobby of the business building at a local college. He has already received permission to do this from the college. The cost of the machine will be \$3,495. Mark estimates that each month, he will receive \$90 after taxes. His plan is to keep this in place for 5 years, at which time, the machine could be sold for an estimated \$200. What would be his return on investment?

Solution:

APLET (press ∇ until the "Finance" aplet is highlighted) 
6 0 ENTER \rightarrow (+) 3 4 9 5 ENTER 9 0 ENTER 1 2 ENTER 2 0 0 ENTER
 \rightarrow \rightarrow 

```
TIME VALUE OF MONEY
N: 60     I%YR: 19.68...
PV: -3,495.00
PMT: 90.00   P/YR: 12
FV: 200.00   End
ENTER YEARLY INT RATE OR SOLVE
EDIT AMORT SOLVE
```

Figure 6

Answer: The investment will generate a return of 19.68% per year.