Purpose of this document:

This Presentation No. 1 file (ver 9e) is designed to be used in conjunction with the Problem Set No. 1 file (ver 9e) which is accessible from within the “Problem Set” header on the SavingandBorrowing.org webpage.

One file is to use for the presentation, the other is to make handouts so each students may follow along as the problems are worked through.

Saving and Borrowing: Fun With Real World Consumer Finance, part 1

SavingandBorrowing.org, a TEA CPE Provider
Presented by Dean Harris, CPA (ret.)
dean@SavingandBorrowing.org

First, a big "thank you" to the following for their assistance with this presentation…

Melissa Thomas, CTE Specialist, Round Rock ISD

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Kay Norton, support associate

Rene Gonzales, Virtual-Enterprises.com

Taylor Tackitt, webmaster and creative consultant

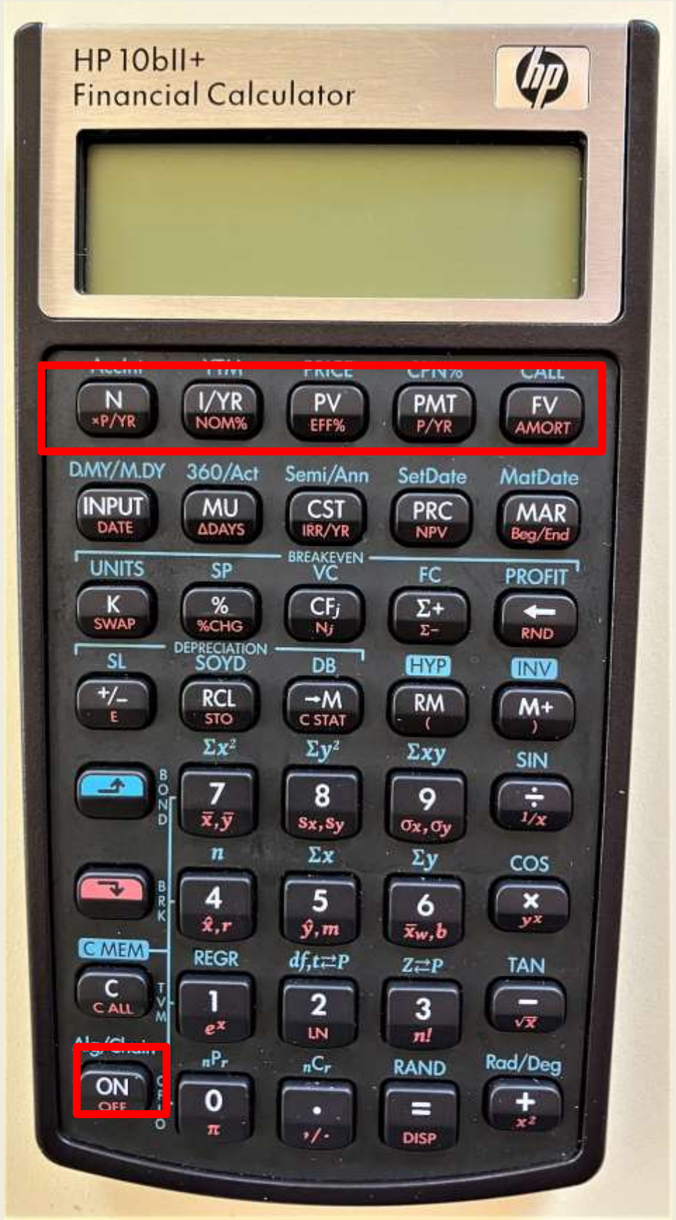
In A Day Development, app developer

NHP Private Operating Foundation, sponsor

Here is the 10bII+:

Time Value of Money (TVM) Keys:

“On and Off” Key:



Good News! Little note taking for definitions is needed.

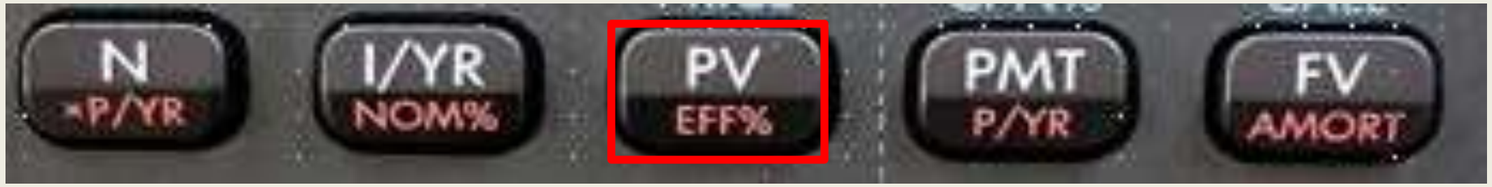
As we work the problems, you will practice enough to soon understand the concepts. Very little memorization is involved.

Time Value of Money (TVM) Keys:

N = Number of Months, in Total (Multiply Number of Years x 12)

Example: 4 year loan is 4 x 12 = 48 N

I/YR = Percent Interest Per Year. (For 6%, enter simply as 6)



PV = Present Value (Today’s Loan Amount or Today’s Lump Sum Deposit)

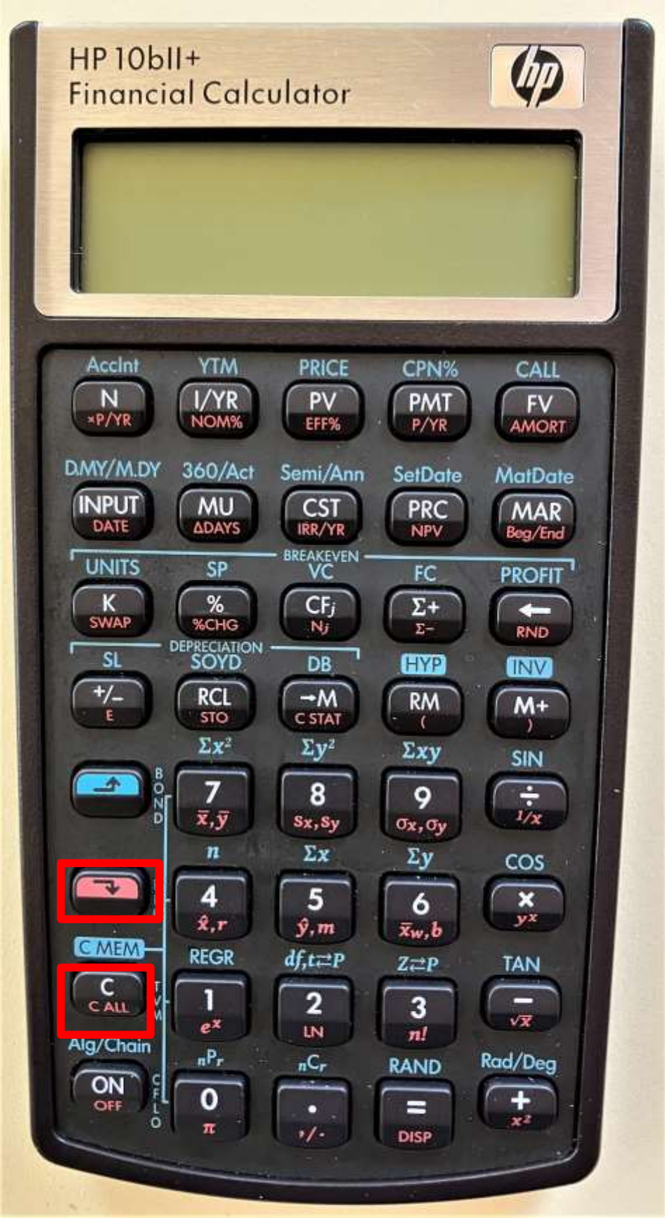
PMT = Payment (the same amount over and over, often monthly)

These could be payments you make on a loan, payments you make to a savings account, payments you get from your retirement account, etc.

Note: If are entering a PMT, make it a negative number by pressing +/- after entering the number on the display.

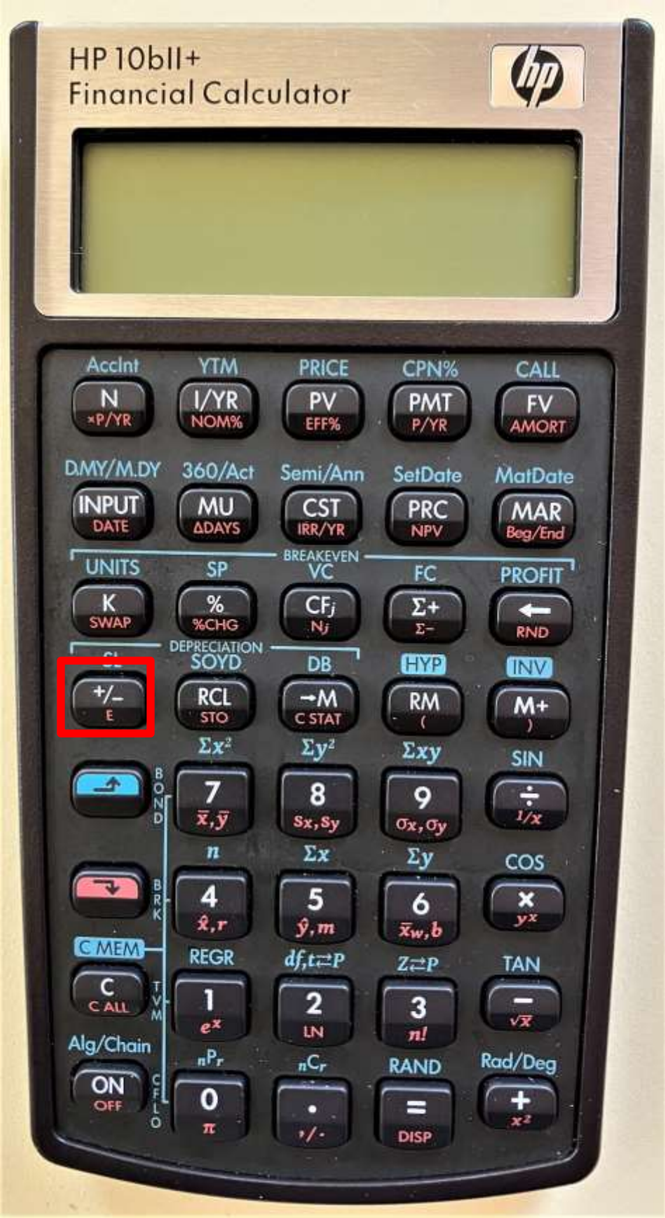
FV = Future Value (How Much Payments, or a Lump Sum deposit will grow to in the future)

Three Operating Tips

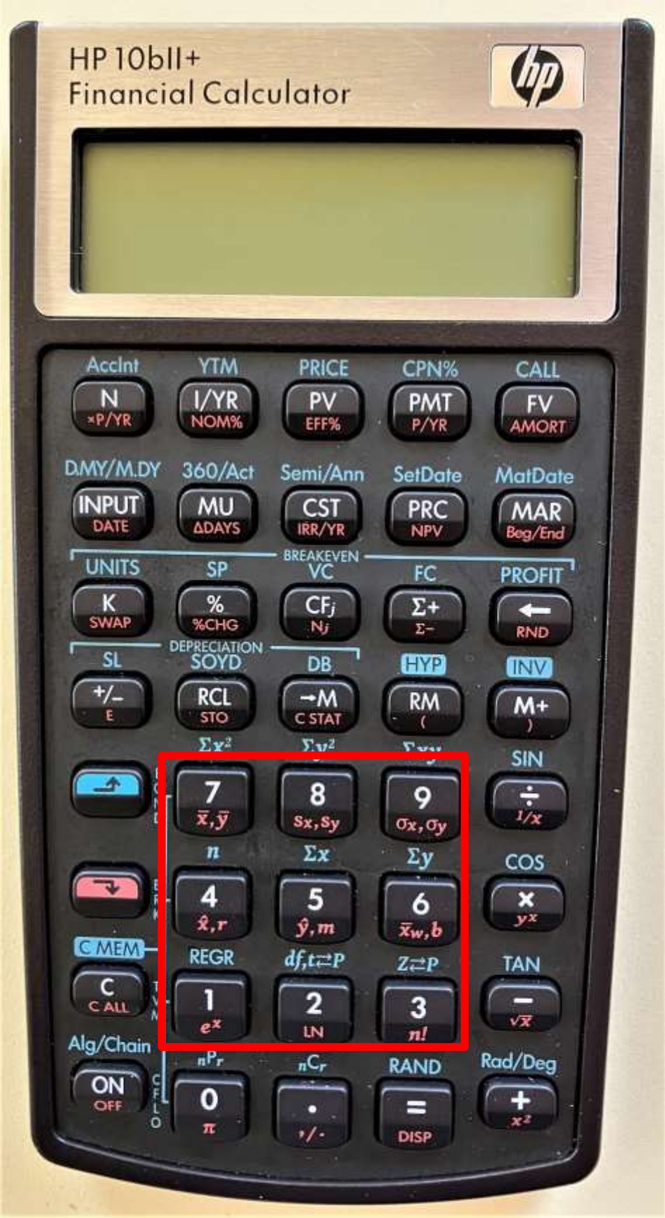


1. Note the Orange Arrow key on the lower left side.

Before we work a new problem, we will clear any previous time value of money (TVM) entries. To do so, press the Orange Arrow key, then move your finger down and press the C ALL key which is on the bottom of the C key. (Don't press them both at the same time.) Then It will briefly display "12 P _ Yr" for monthly payments.



2. Payments are entered as Negative Numbers. Note the "+/-" key on the left side about midway down. If entering a Payment (by <u>first</u> entering the Payment amount on the display), you will <u>then press the +/- key</u> to make the Payment number negative. (Think of Payments as cash outflows.) Next, you would press the PMT key.



3. To work problems, use the keypad to enter a number from the problem onto the display using the regular keypad, and then press the TVM button on the top row that is associated with (or linked to) that number. These same steps will happen three times, and then we solve for the answer by pressing the TVM button specified for the final answer.

Here are some things we didn't want to pass over without mentioning, but they won't affect our calculations today:

1) The answers we calculate today will be affected in the real world by the effects of inflation and income taxes.

2) When we are working a problem that mentions a "Payment," we are assuming that payment is made at the end of the month like most loan payments are. (All problems we work today will be treated like this.)

Fancy word alert: This "end of the month" payment type can be referred to as an "ordinary annuity."

3) With other payments, like when you open a savings account and make regular deposits to it, the first payment is made right when you open it.

Fancy word alert: This "beginning of the month" payment type can be referred to as an "annuity due."

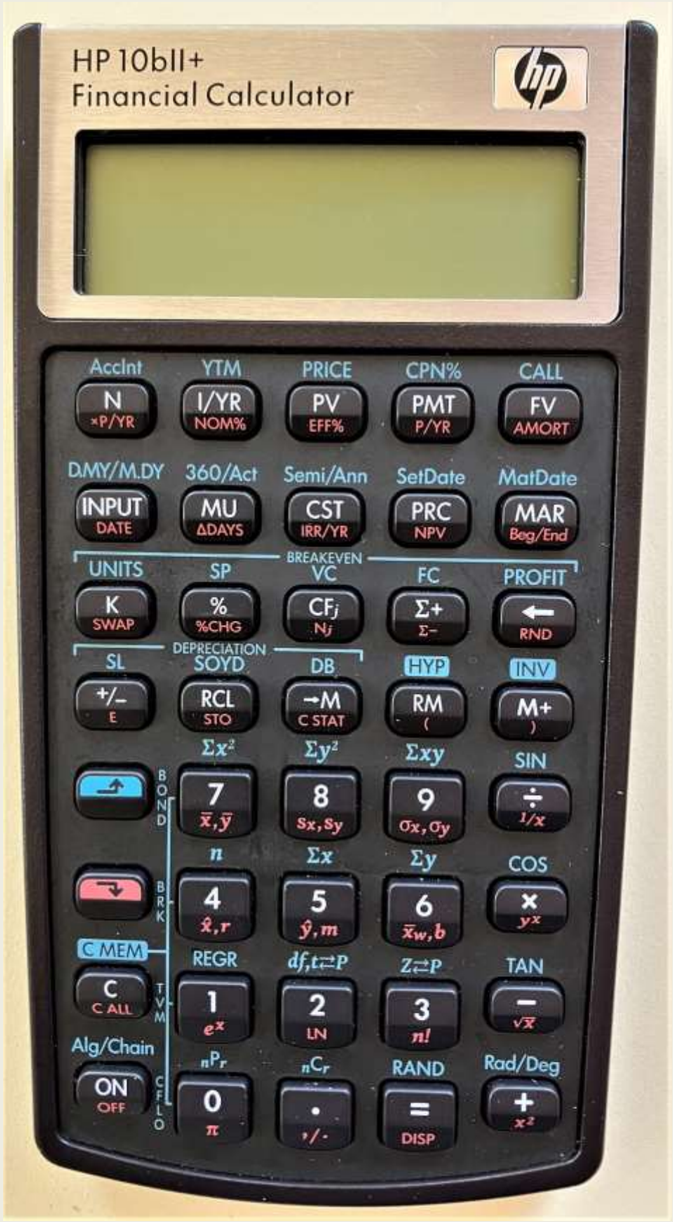
Ok, we're about to pass out the calculators and problem sets.

-Please follow along with the keys we press in class. Pressing other keys may throw your answers off.

-Remember to press only one key at a time. The calculator will malfunction if you press two keys at once.

-If your calculator is dead or doesn't seem to work correctly, please don't hesitate to raise your hand so we can swap it out with another one.

-Does anyone need something to write with today? (either pen or pencil is fine) I have some pencils that you can use, and afterwards please just leave them where you are seated and we will pick them up.

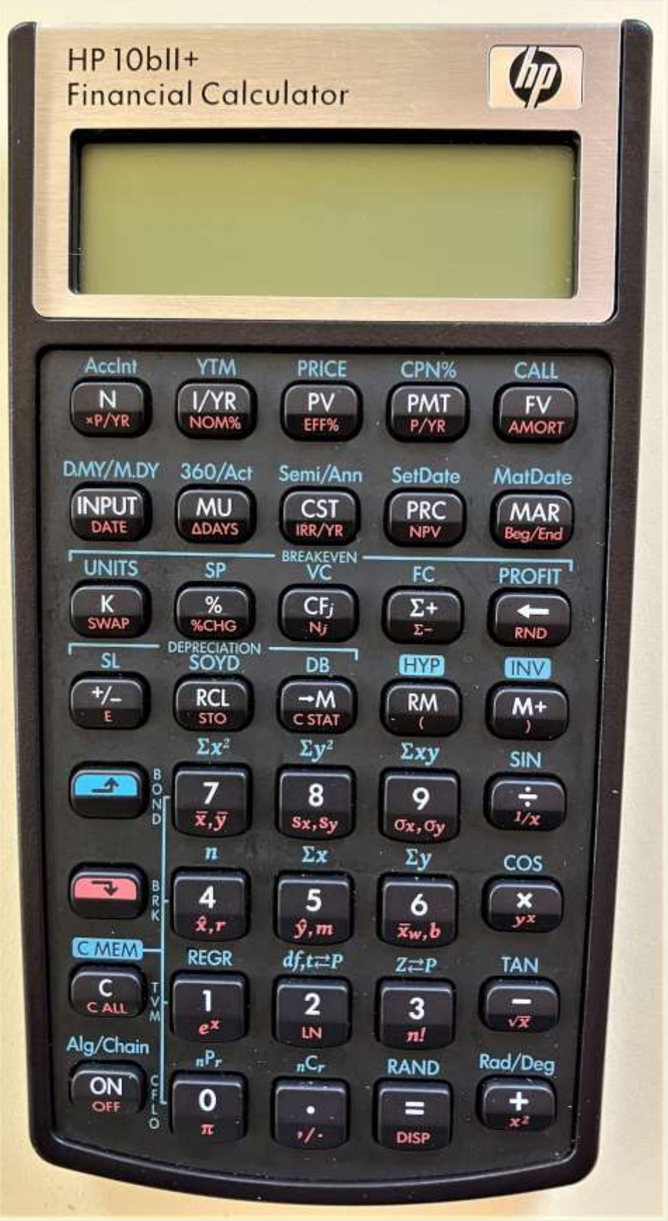


C1b. How much of a loan can I get?

First, press the Orange Arrow key, then move your finger down and press the C ALL key.

How much of a car loan can you get today if you make a $300 monthly payment, and are considering a 36-month loan at 7.24% annual interest?

Hint: For your very first entry, I will go step-by-step. So to enter the $300 payment, first enter 300 on the keypad, and then press the "+/-" key to make the payment a negative number. The next 3 slides will show you exactly what to do.



C1b. How much of a loan can I get?

How much of a car loan can you get today if you make a $300 monthly payment, and are considering a 36-month loan at 7.24% annual interest?

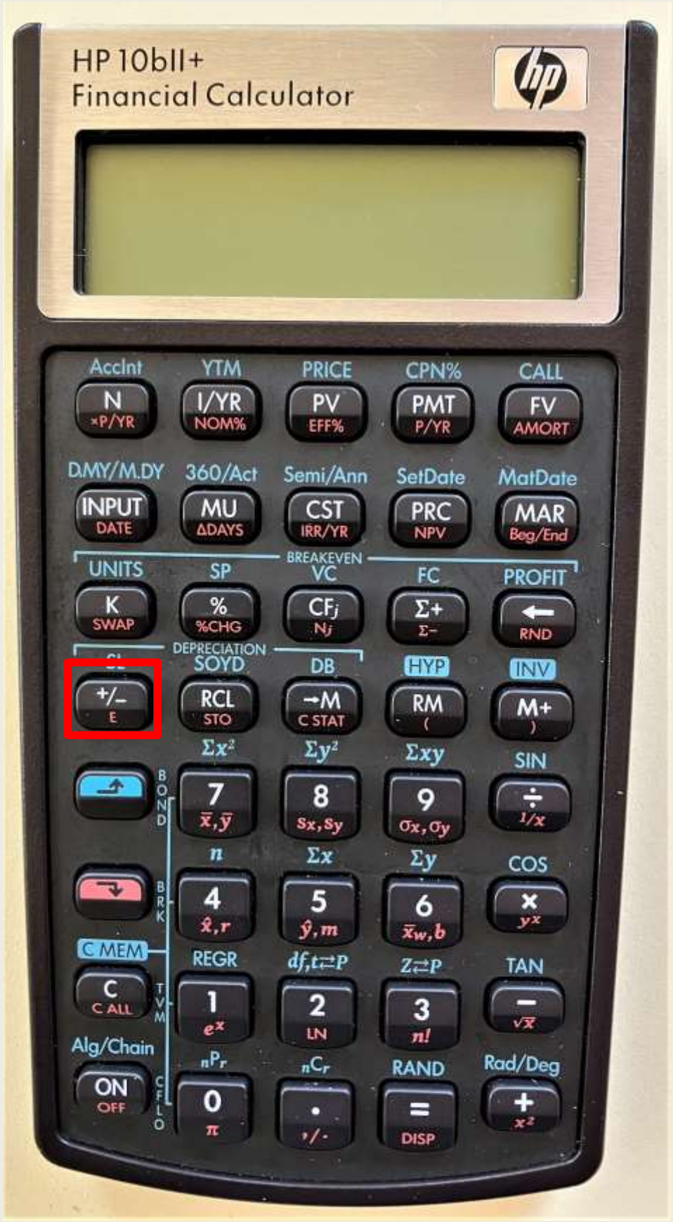
First, enter 300 on the keypad.

300 _____ ☐

_____ ☐

_____ ☐

☐ _____



C1b. How much of a loan can I get?

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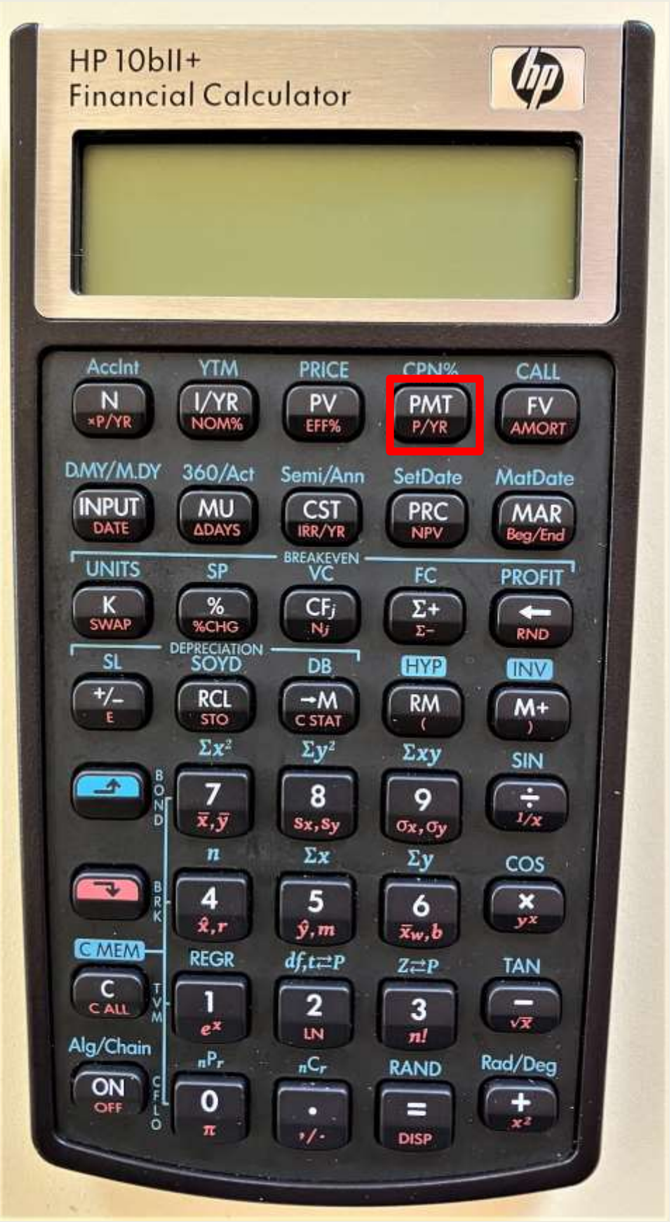
Next, press “+/-” and your display will show “-300.”

- 300

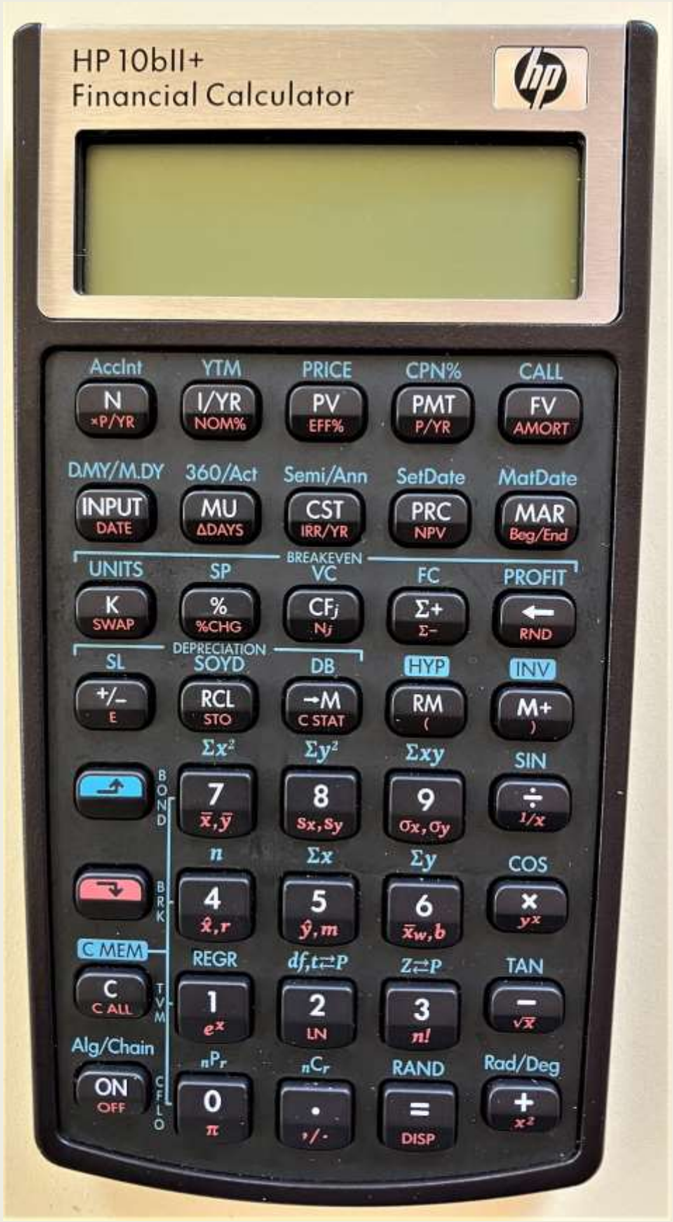


C1b. How much of a loan can I get?

How much of a car loan can you get today if you make a $300 monthly payment, and are considering a 36-month loan at 7.24% annual interest?

Next press the “PMT” key to tell the calc what the number represents. We will now continue with the rest of the problem as you would normally. What’s the next entry?

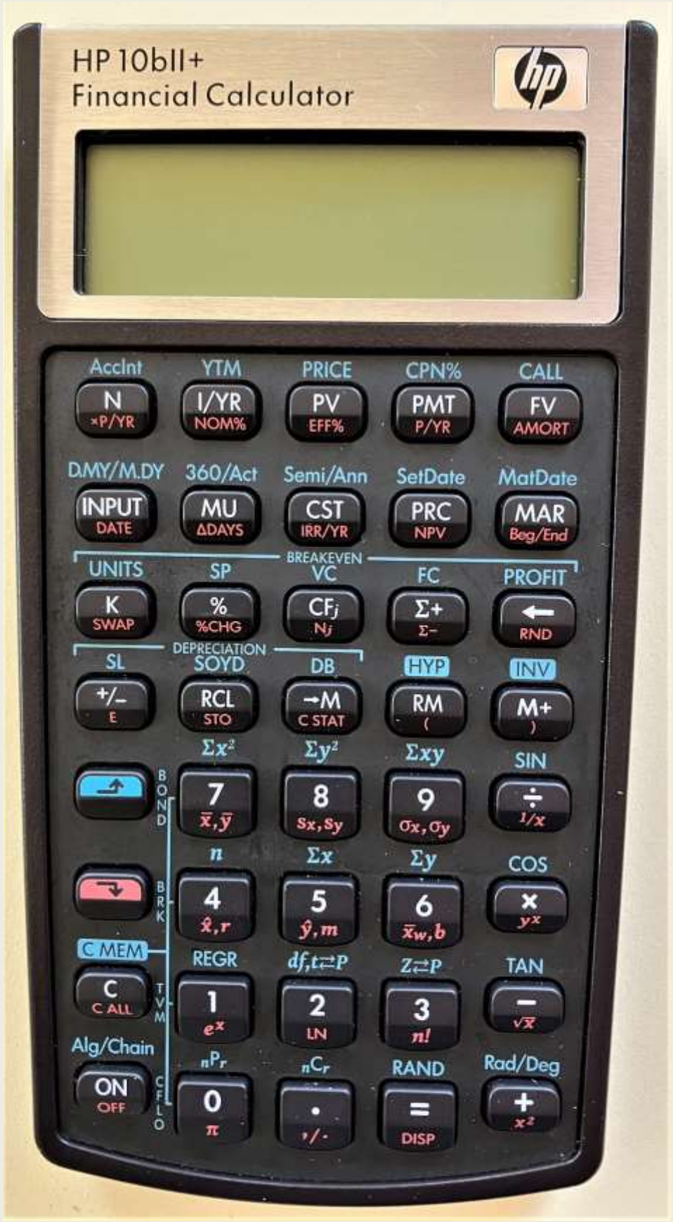
- 300	PMT		



C1b. How much of a loan can I get?

How much of a car loan can you get today if you make a $300 monthly payment, and are considering a 36-month loan at 7.24% annual interest?

- 300	PMT		
36	N		



C1b. How much of a loan can I get?

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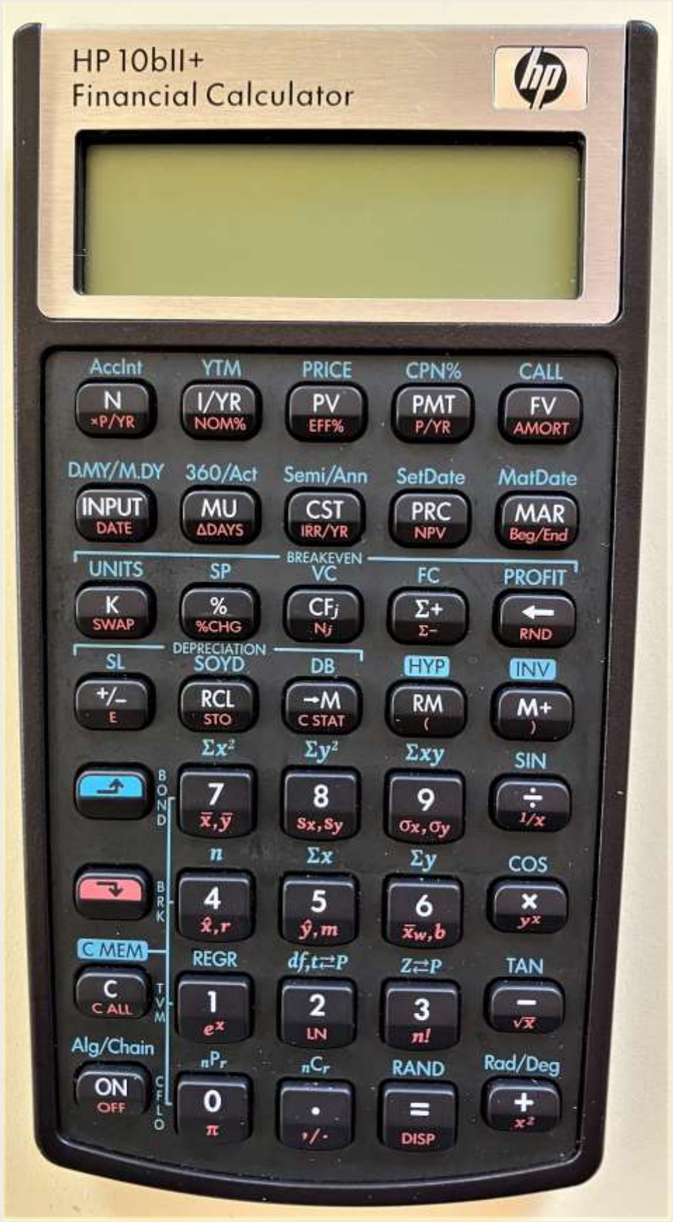
- 300	PMT	7.24	I/YR
36	N		



C1b. How much of a loan can I get?

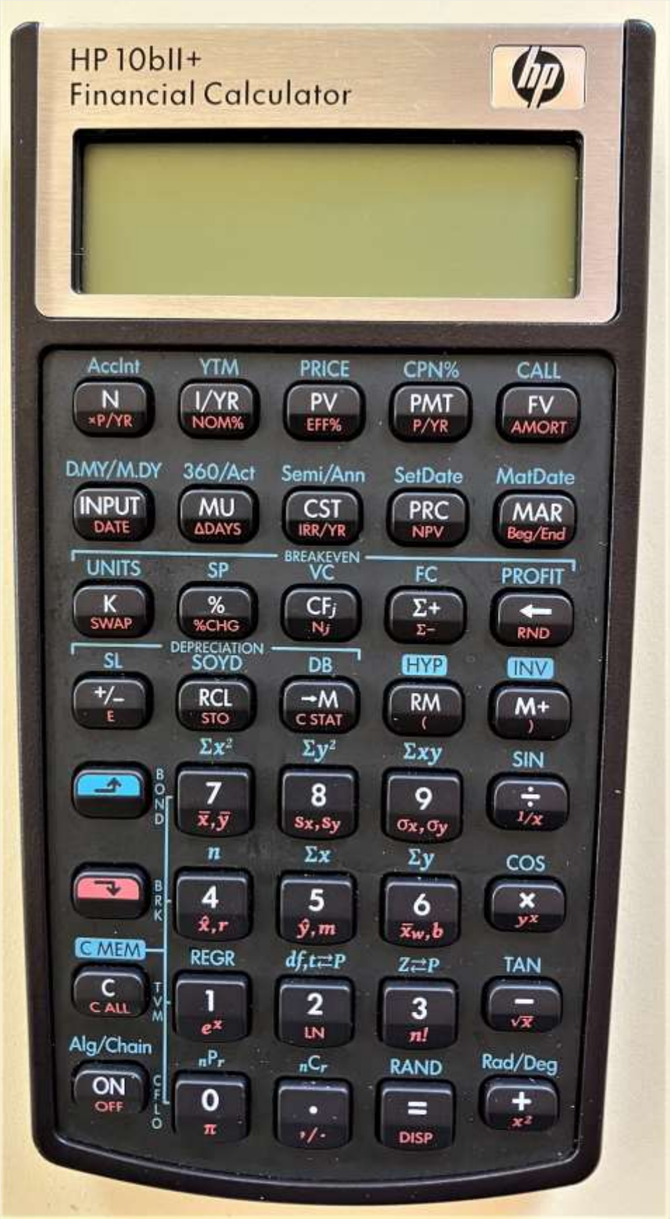
How much of a car loan can you get today if you make a $300 monthly payment, and are considering a 36-month loan at 7.24% annual interest?

- 300 PMT

36 N

7.24 I/YR

PV 9,681.50


HP 10bII+
Financial Calculator
AccInt
YTM
PRICE
CPN%
CALL
N
×P/YR
I/YR
NOM%
PV
EFF%
PMT
P/YR
FV
AMORT
D.MY/M.DY
360/Act
Semi/Ann
SetDate
MatDate
INPUT
DATE
MU
ΔDAYS
CST
IRR/YR
PRC
NPV
MAR
Beg/End
BREAKEVEN
UNITS
SP
VC
FC
PROFIT
K
SWAP
%
%CHG
CFj
Nj
Σ+
Σ−
RND
DEPRECIATION
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Σx²
Σy²
Σxy
SIN
BOND
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x̄, ȳ
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Sx, Sy
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σx, σy
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x̂, r
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x̄w, b
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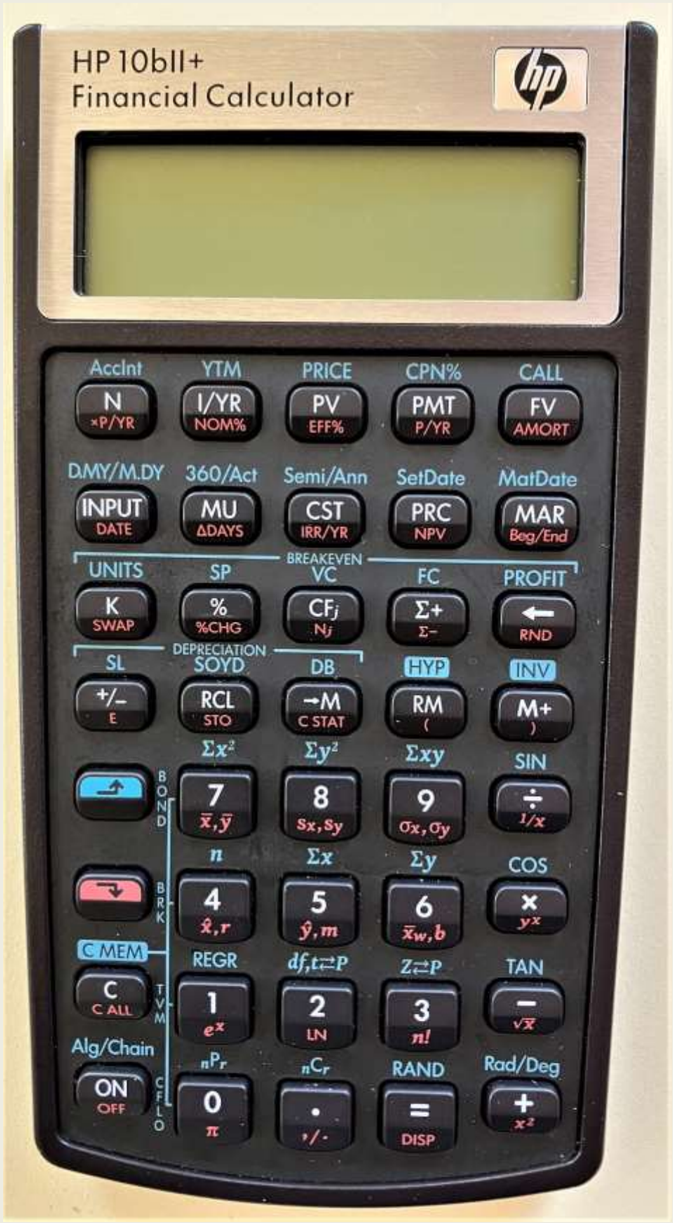
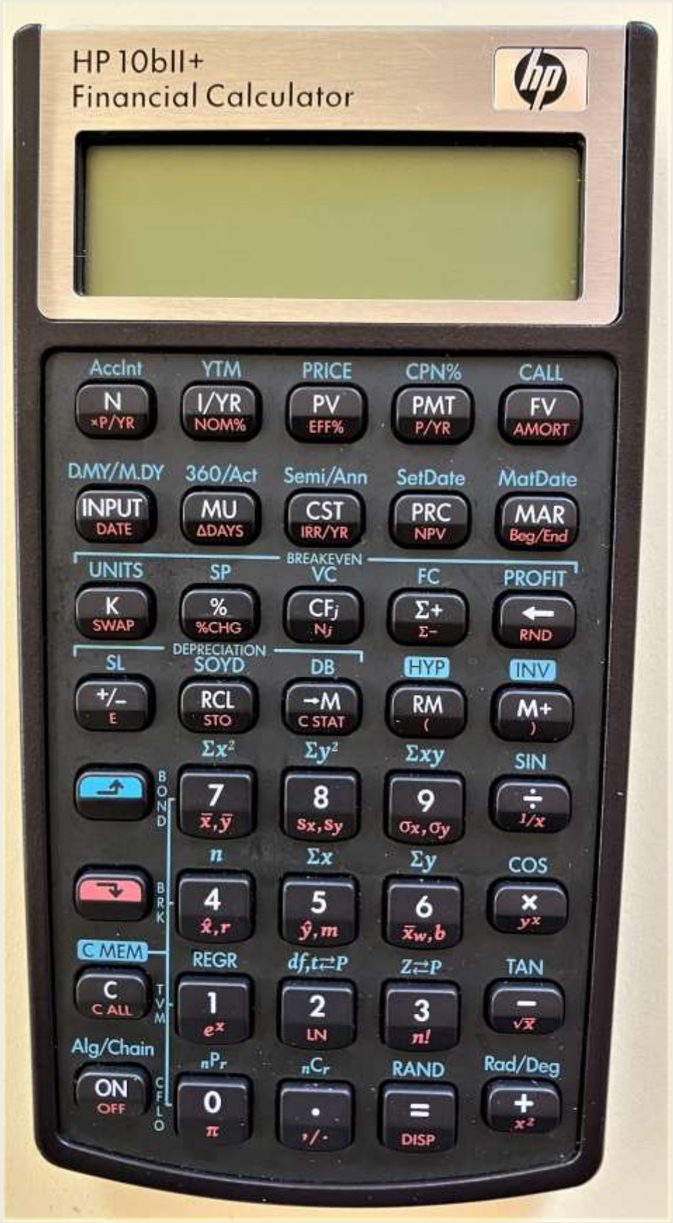


C2. Saving to become a millionaire?

First, press the Orange Arrow key, then move your finger down and press the C ALL key.

How much do you have to save per month starting at age 18 to have $1,000,000 at age 60 if you invest in a stock index fund that averages 10% APR?



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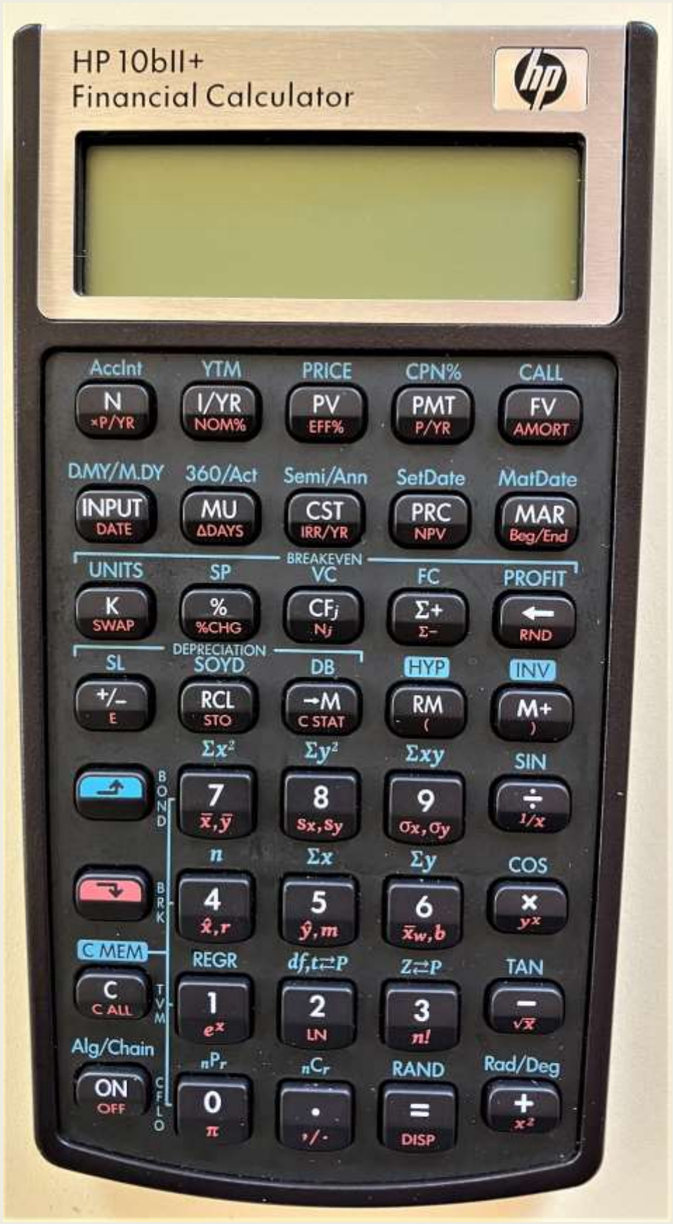
1,000,000 FV



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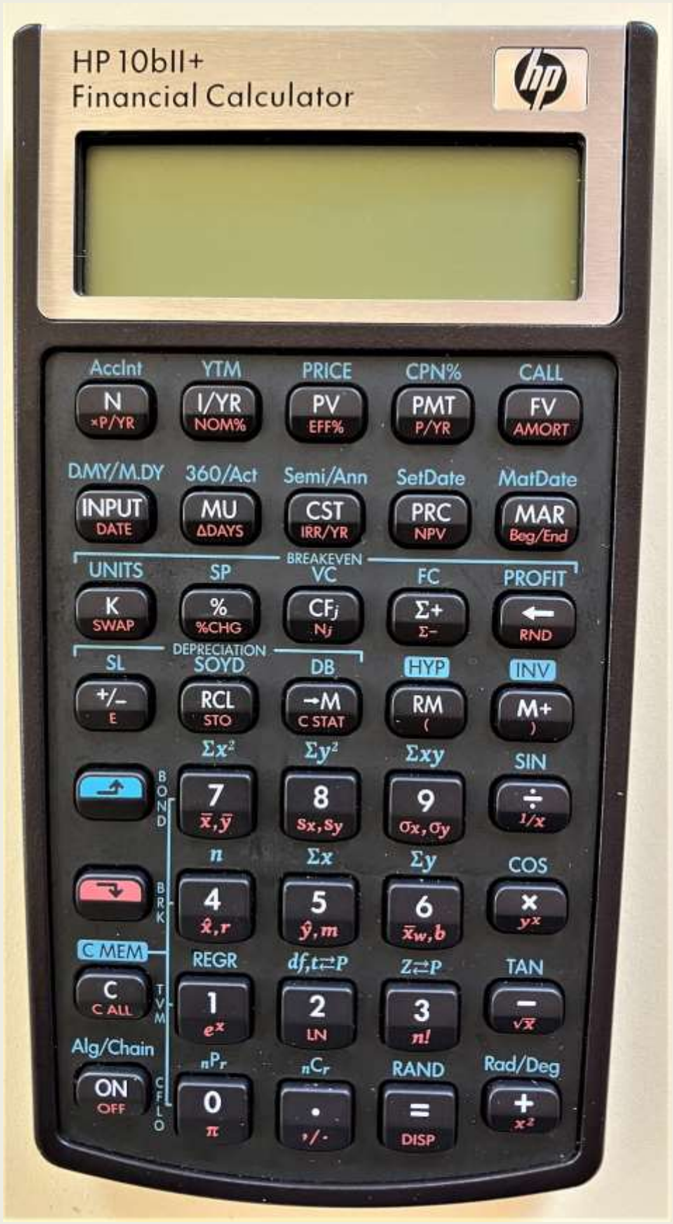
How much do you have to save per month starting at age 18 to have $1,000,000 at age 60 if you invest in a stock index fund that averages 10% APR?

1,000,000 FV

60-18= 42
42x12=504 N



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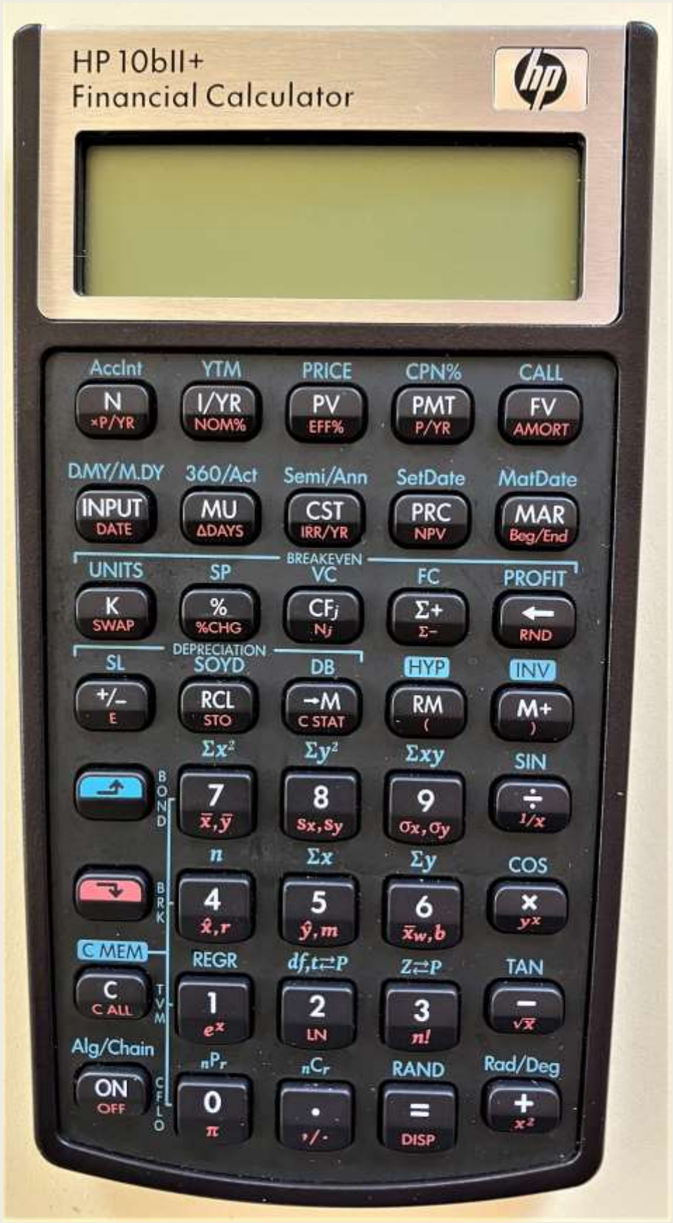
1,000,000 — FV

60-18= 42
42x12=504 — N

10 — I/YR



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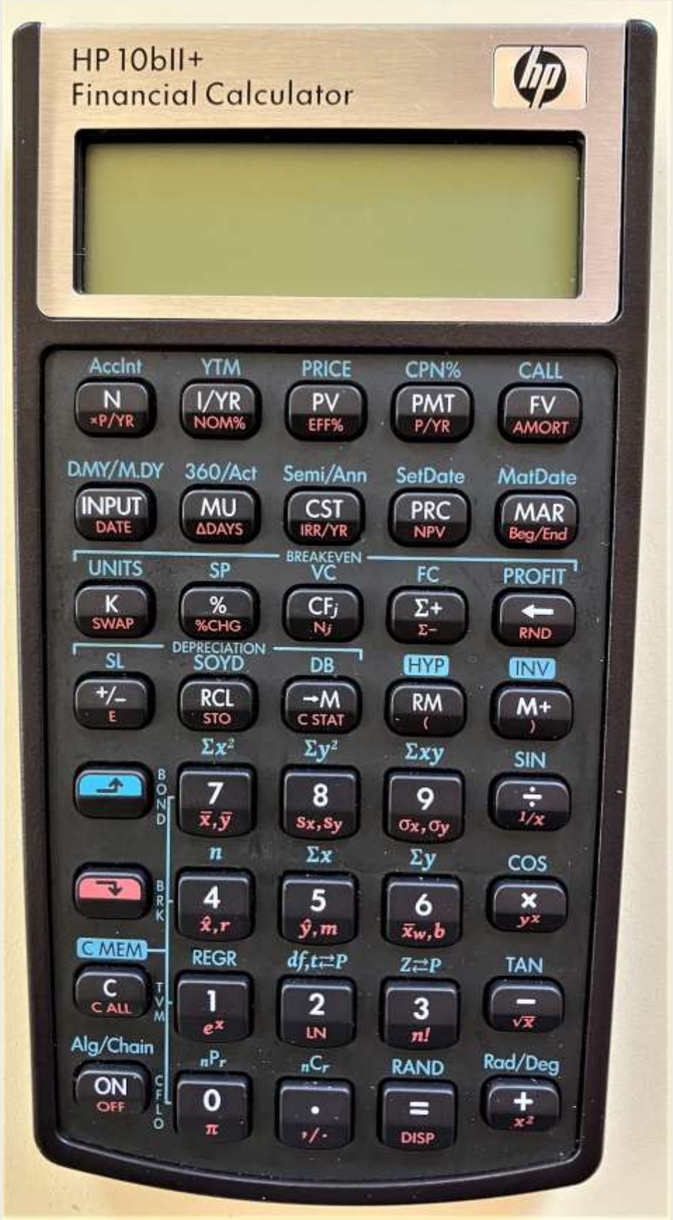
1,000,000 — FV

60-18= 42
42x12=504 — N

10 — I/YR

PMT — -129.13


HP 10bII+
Financial Calculator
AccInt
YTM
PRICE
CPN%
CALL
N
×P/YR
I/YR
NOM%
PV
EFF%
PMT
P/YR
FV
AMORT
D.MY/M.DY
360/Act
Semi/Ann
SetDate
MatDate
INPUT
DATE
MU
ΔDAYS
CST
IRR/YR
PRC
NPV
MAR
Beg/End
BREAKEVEN
UNITS
SP
VC
FC
PROFIT
K
SWAP
%
%CHG
CFj
Nj
Σ+
Σ−
RND
DEPRECIATION
SL
SOYD
DB
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+/−
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Σx²
Σy²
Σxy
SIN
BOND
7
x̄,ȳ
8
Sx,Sy
9
σx,σy
÷
1/x
n
Σx
Σy
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BRK
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ŷ,m
6
x̄w,b
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yˣ
C MEM
REGR
df,t⇄P
Z⇄P
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Alg/Chain
nPr
nCr
RAND
Rad/Deg
ON
OFF
CFLO
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π
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DISP
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x²

3.2. Computing Interest Rate Charged on Rent-to-Own

First, press the Orange Arrow key, then move your finger down and press the C ALL key.

Suppose you walk into Yuddy's Rent-to-Own store in Round Rock and see an HP refurbished laptop you want. Today's cash price is $1,299.99. If you don't have the cash today, they do advertise a financing plan. The Number of payments you will make is 18, in the amount of $107.99 per Payment.

TASK: What annual interest rate are you paying on the monthly payment plan?

Discussion: How does this interest rate compare to bank loans, credit cards, and pawn shops?

3.2. Topic: Computing Interest Rate Charged on Rent-to-Own

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TASK: What annual interest rate are you paying on the monthly payment plan?

1299.99	PV

Discussion: How does this interest rate compare to bank loans, credit cards, and pawn shops?

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TASK: What annual interest rate are you paying on the monthly payment plan?

1299.99	PV
18	N

Discussion: How does this interest rate compare to bank loans, credit cards, and pawn shops?

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TASK: What annual interest rate are you paying on the monthly payment plan?

1299.99	PV
18	N
-107.99	PMT

Discussion: How does this interest rate compare to bank loans, credit cards, and pawn shops?

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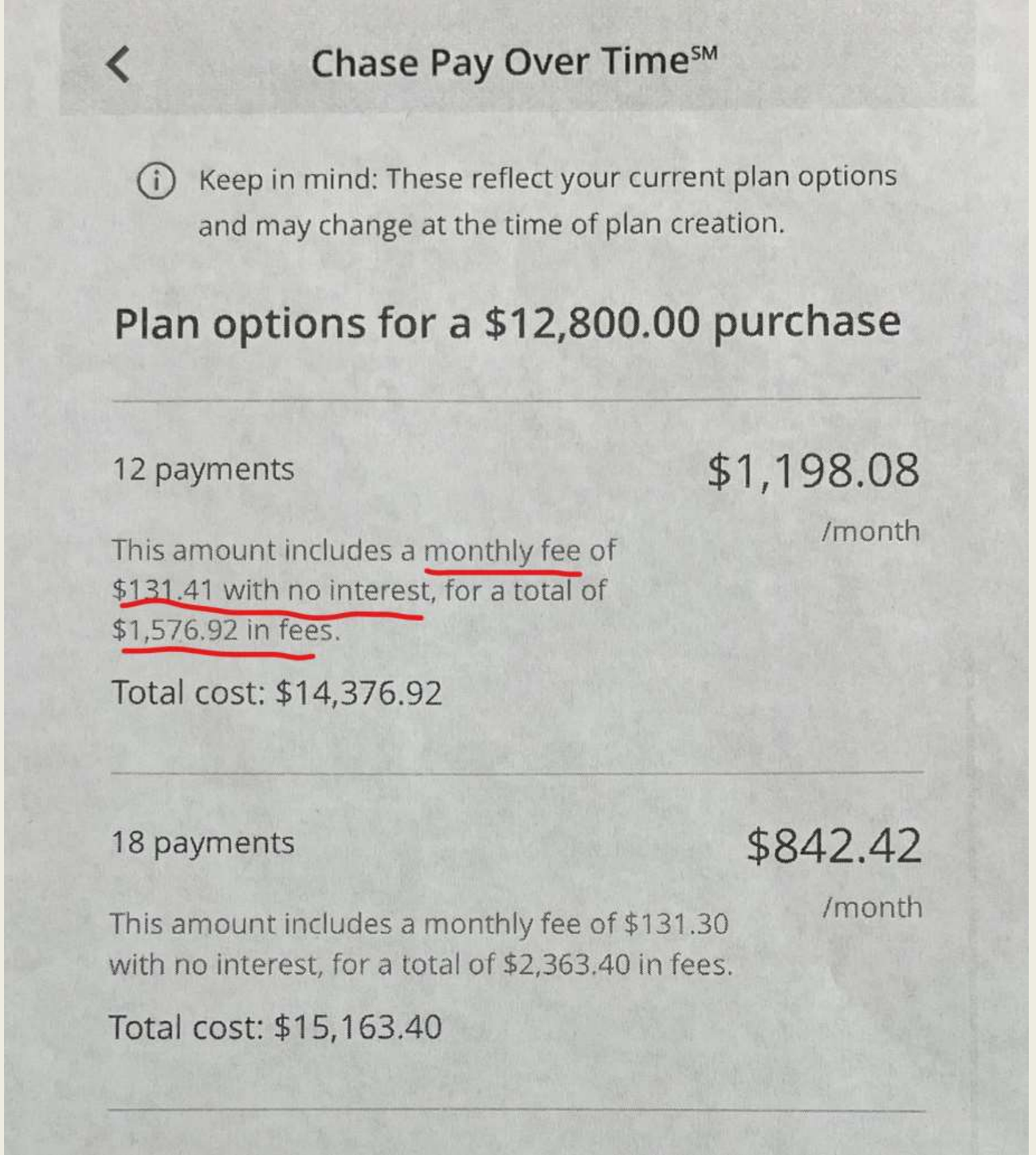
TASK: What annual interest rate are you paying on the monthly payment plan?

1299.99	PV
18	N
-107.99	PMT
55.52%	I/YR

Discussion: How does this interest rate compare to bank loans, credit cards, and pawn shops?


Chase Pay Over Time℠
Keep in mind: These reflect your current plan options and may change at the time of plan creation.
Plan options for a $12,800.00 purchase
12 payments
$1,198.08
/month
This amount includes a monthly fee of $131.41 with no interest, for a total of $1,576.92 in fees.
Total cost: $14,376.92
18 payments
$842.42
/month
This amount includes a monthly fee of $131.30 with no interest, for a total of $2,363.40 in fees.
Total cost: $15,163.40

National CSO Loan Corp

Payday Loan

$500, One Payment

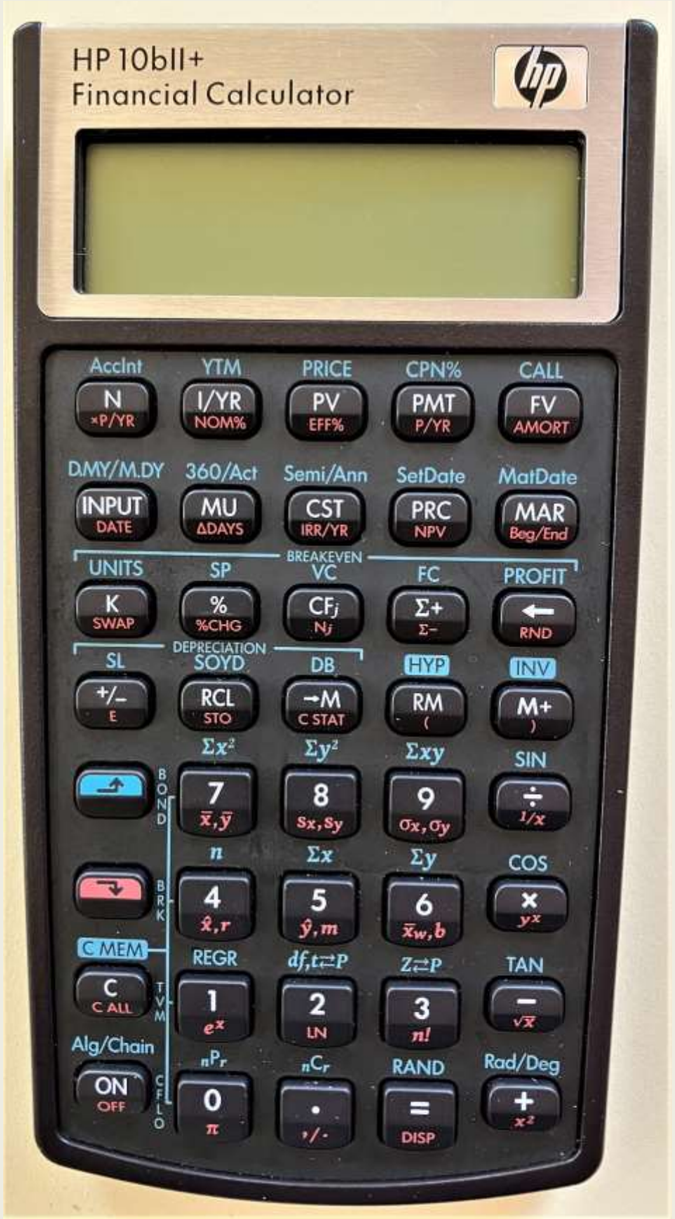
Cost Disclosure

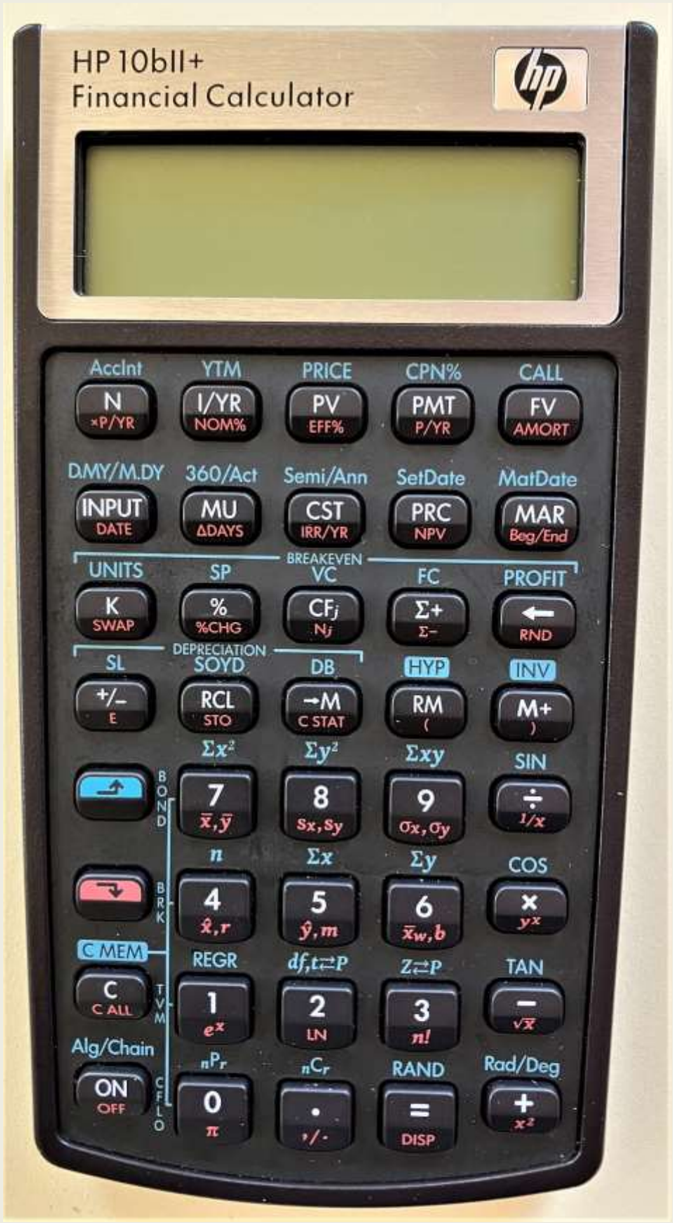
Cost of this loan:

Borrowed amount (cash advance)	$ 500.00
Interest paid to lender (interest rate: 9.95 %)	$ 1.91
Fees paid to National CSO Loan Corp	$ 125.00
Total of payments (if I pay on time)	$ 626.91

APR	661.75 %
Term of loan	14 days

If I pay off the loan in:	I will have to pay interest and fees of approximately:	I will have to pay a total of approximately:
2 Weeks	$ 126.91	$ 626.91
1 Month	$ 254.09	$ 754.09
2 Months	$ 508.19	$ 1,008.19
3 Months	$ 762.27	$ 1,262.27

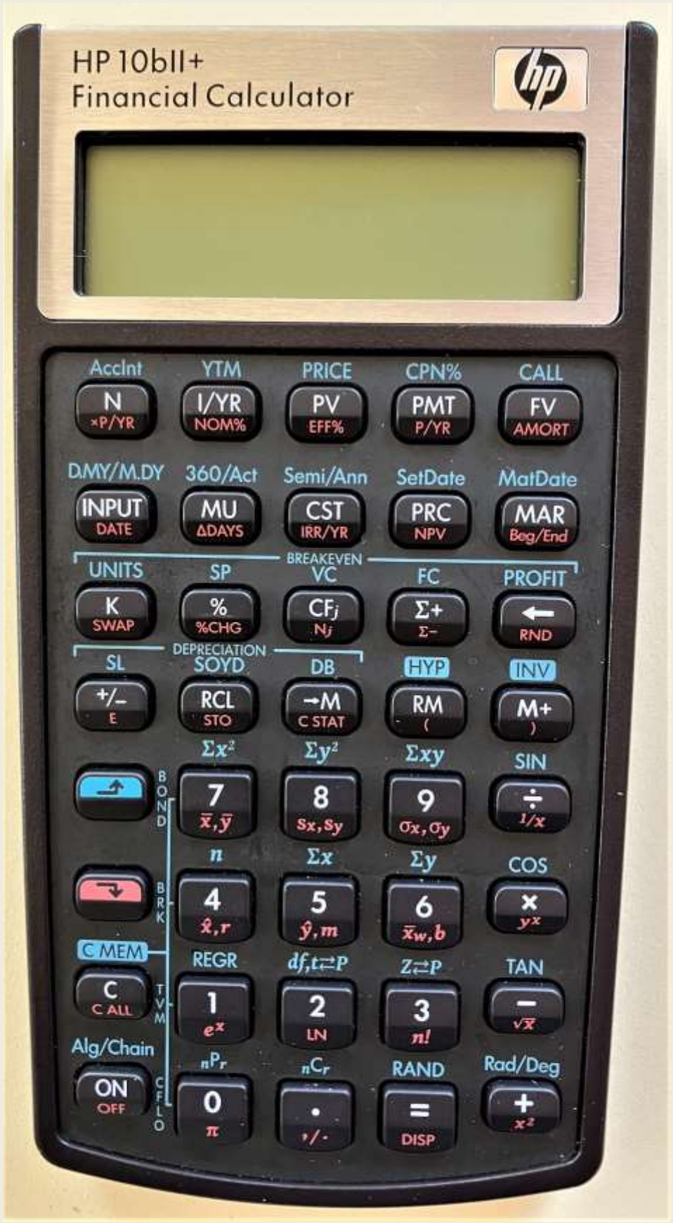

HP 10bII+
Financial Calculator
AccInt
YTM
PRICE
CPN%
CALL
N
×P/YR
I/YR
NOM%
PV
EFF%
PMT
P/YR
FV
AMORT
D.MY/M.DY
360/Act
Semi/Ann
SetDate
MatDate
INPUT
DATE
MU
ΔDAYS
CST
IRR/YR
PRC
NPV
MAR
Beg/End
BREAKEVEN
UNITS
SP
VC
FC
PROFIT
K
SWAP
%
%CHG
CFj
Nj
Σ+
Σ−
RND
DEPRECIATION
SL
SOYD
DB
HYP
INV
+/−
E
RCL
STO
−M
C STAT
RM
(
M+
)
Σx²
Σy²
Σxy
SIN
7
x̄,ȳ
8
Sx,Sy
9
σx,σy
÷
1/x
n
Σx
Σy
COS
4
x̂,r
5
ŷ,m
6
x̄w,b
×
yx
C MEM
REGR
df,t⇄P
Z⇄P
TAN
C
C ALL
1
ex
2
LN
3
n!
−
√x̄
Alg/Chain
nPr
nCr
RAND
Rad/Deg
ON
OFF
0
π
•
+/-
=
DISP
+
x²
BOND
BRK
TVM
CLR



C5. Retirement Nest Egg Amount?

First, press the Orange Arrow key, then move your finger down and press the C ALL key.

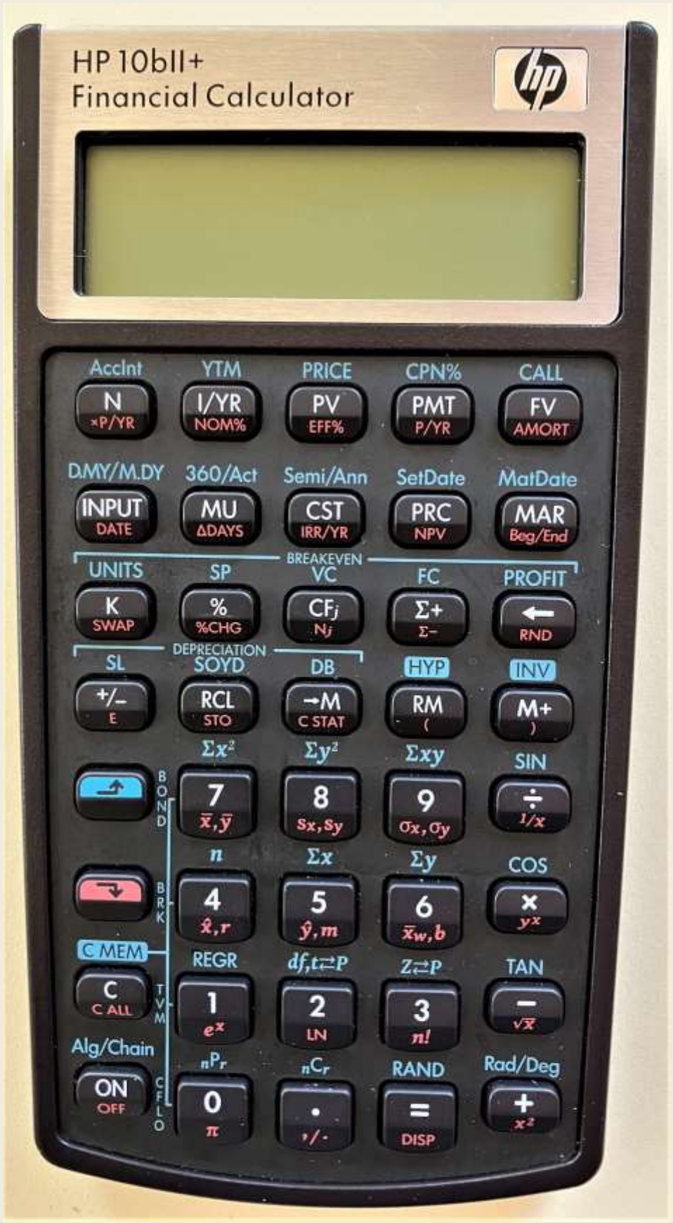
What amount will you need in the bank when you retire in order to make withdrawals of $2,000 monthly for 20 years if interest rates are 4% APR?



C5. Retirement Nest Egg Amount?

What amount will you need in the bank when you retire in order to make withdrawals of $2,000 monthly for 20 years if interest rates are 4% APR?

-2000 PMT



C5. Retirement Nest Egg Amount?

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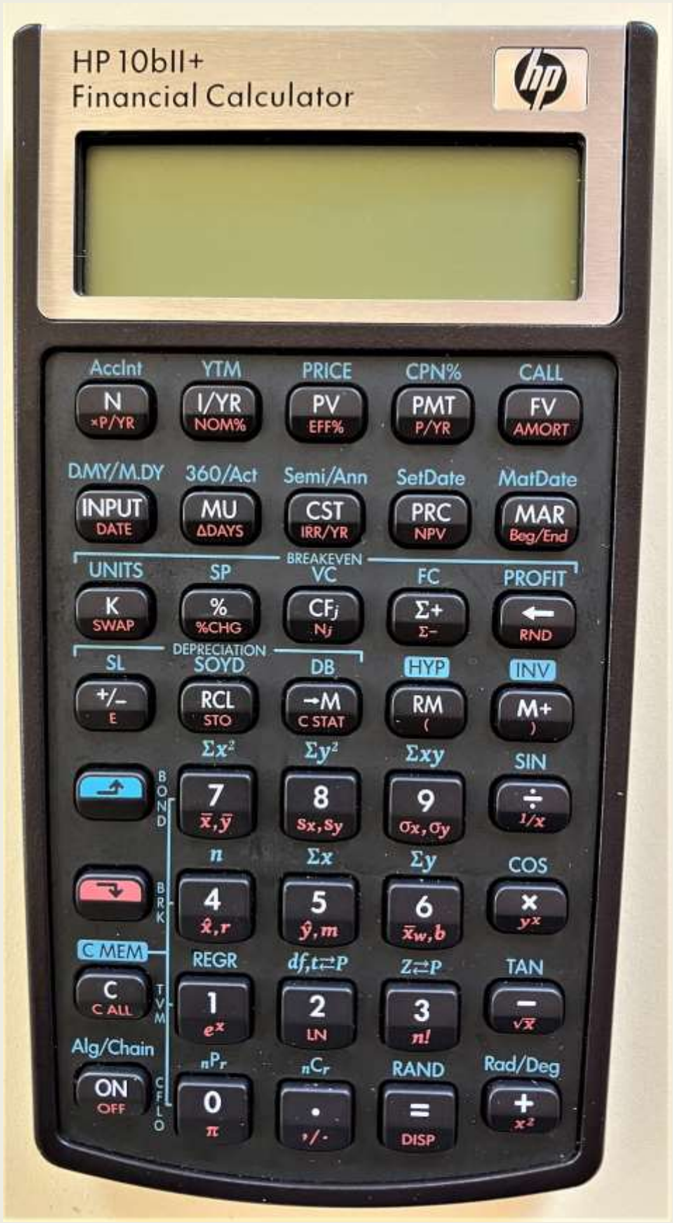
-2000 PMT

20X12=240 N



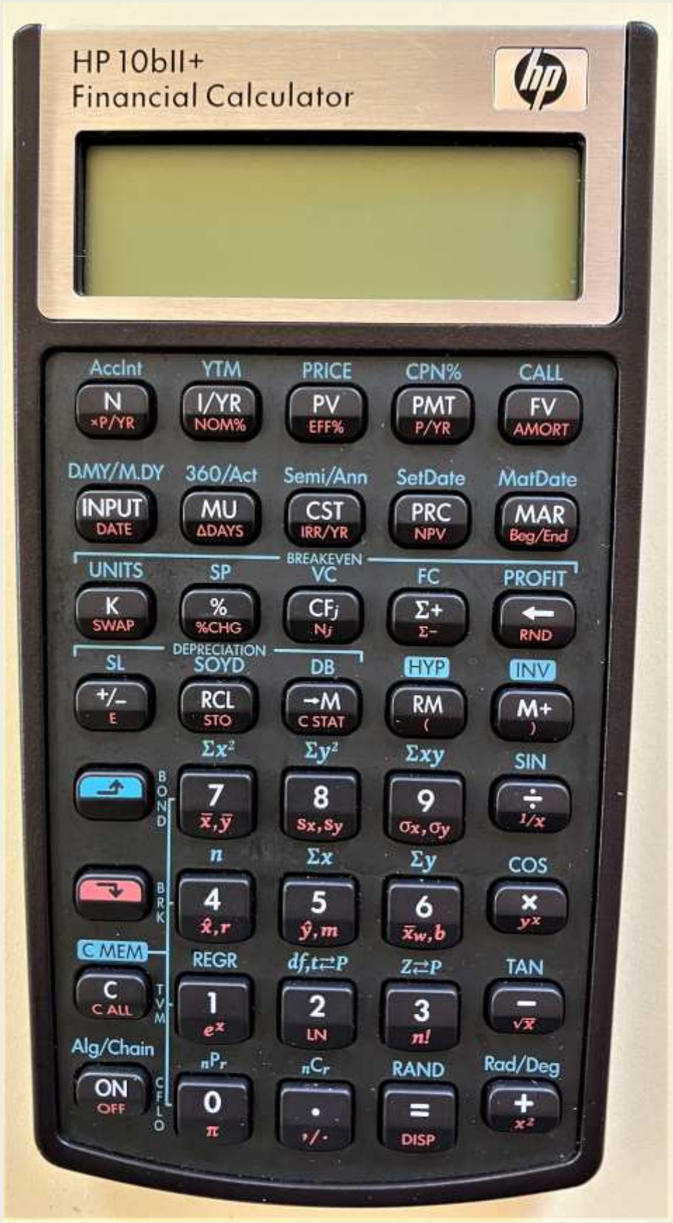
C5. Retirement Nest Egg Amount?

What amount will you need in the bank when you retire in order to make withdrawals of $2,000 monthly for 20 years if interest rates are 4% APR?

-2000 PMT

20X12=240 N

4 I/YR



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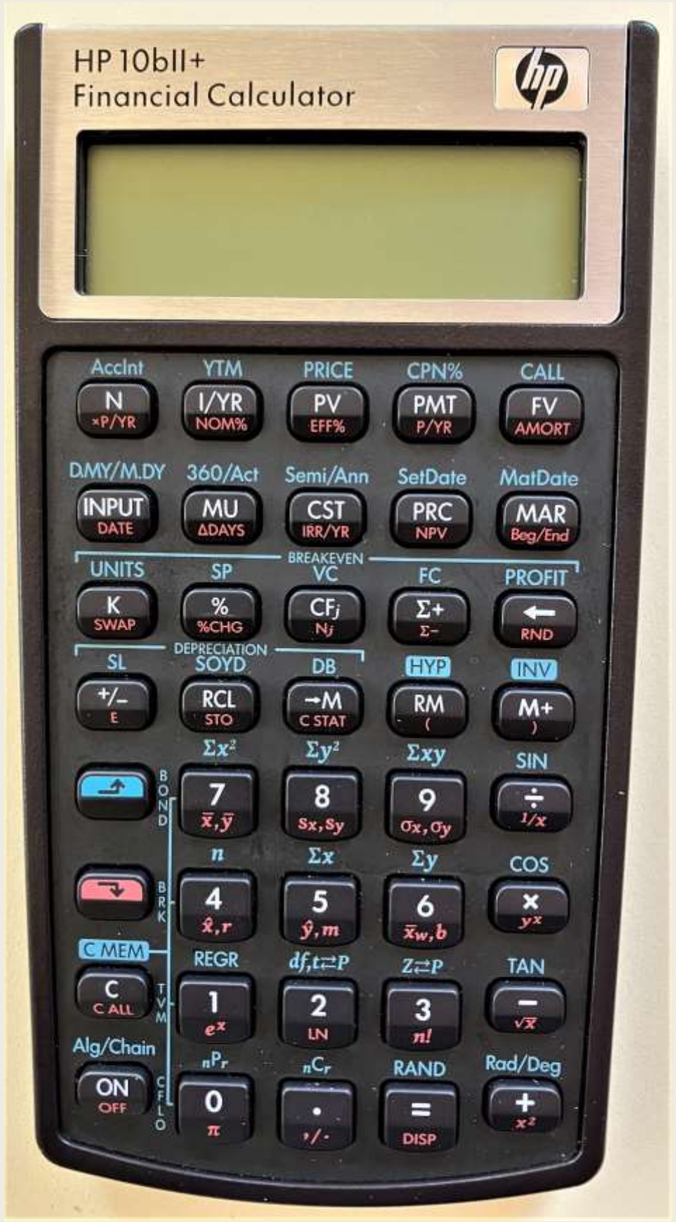
4 I/YR

20X12=240 N

PV 330,043.72


HP 10bII+
Financial Calculator
AccInt
YTM
PRICE
CPN%
CALL
N
×P/YR
I/YR
NOM%
PV
EFF%
PMT
P/YR
FV
AMORT
D.MY/M.DY
360/Act
Semi/Ann
SetDate
MatDate
INPUT
DATE
MU
ΔDAYS
CST
IRR/YR
PRC
NPV
MAR
Beg/End
BREAKEVEN
UNITS
SP
VC
FC
PROFIT
K
SWAP
%
%CHG
CFj
Nj
Σ+
Σ−
RND
DEPRECIATION
SL
SOYD
DB
HYP
INV
+/−
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Σx²
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7
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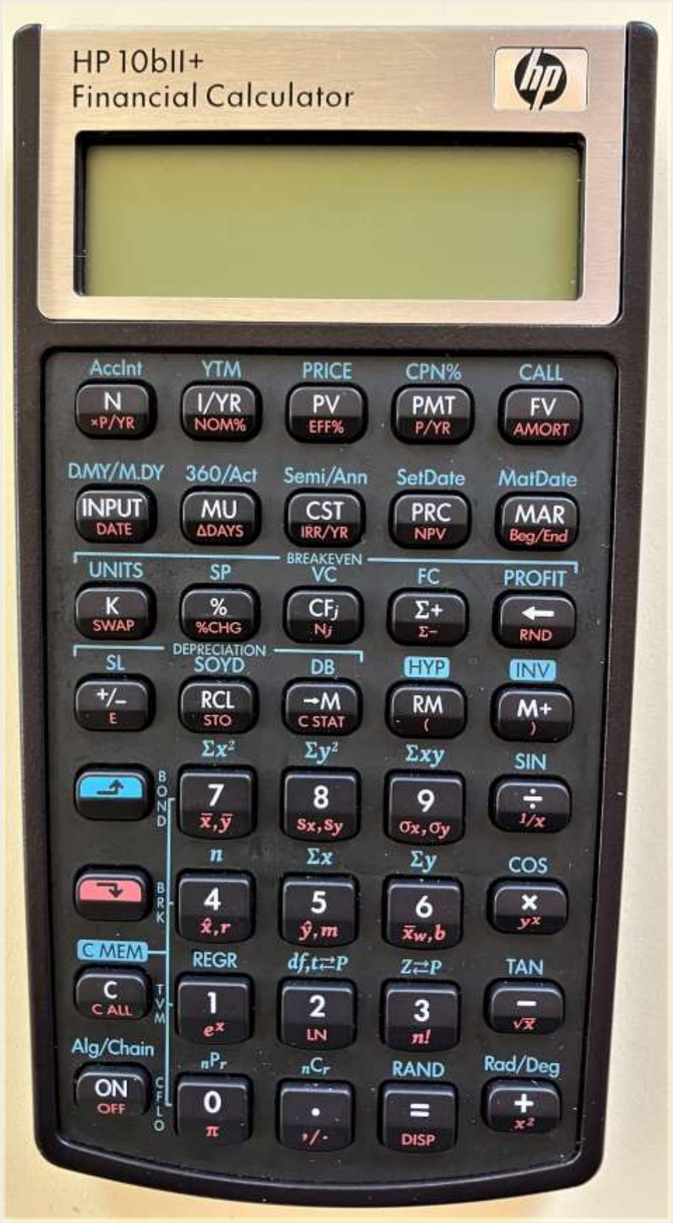
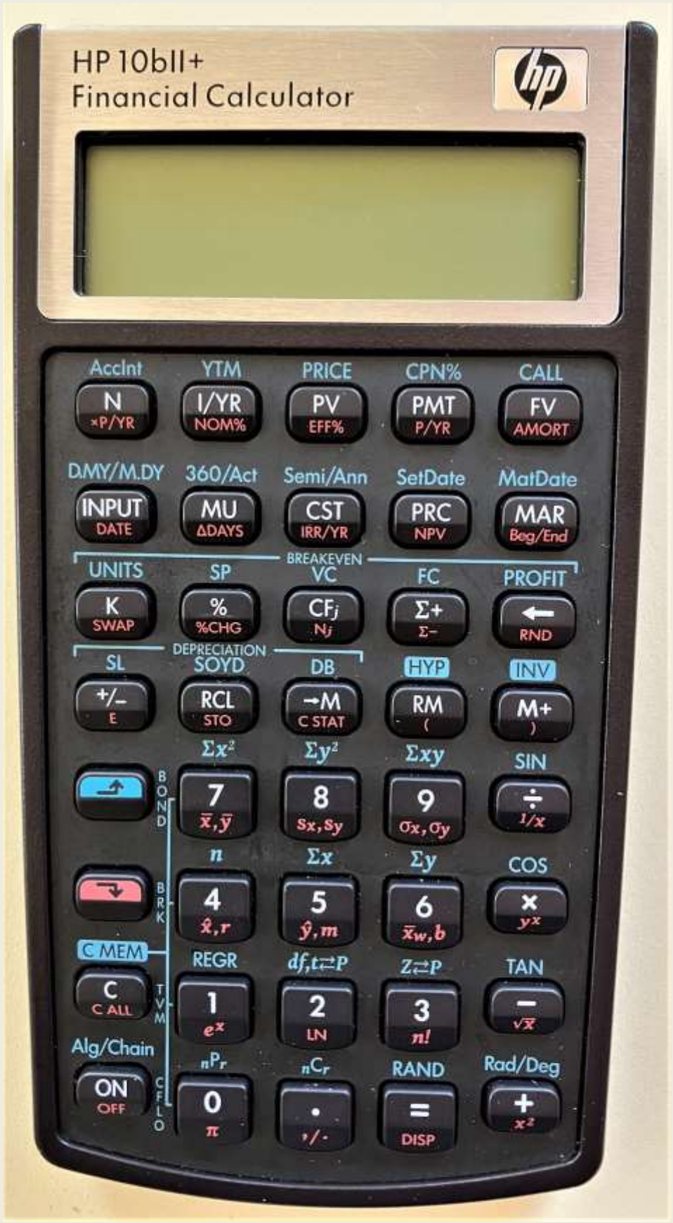


C6. Calculate A Monthly Payment?

First, press the Orange Arrow key, then move your finger down and press the C ALL.

And of course, a simple payment… What would the payments be on a $15,000 car loan for 48 months at 7.42% APR? But what if you could only afford $300 per month, how many months would the loan need to be for?



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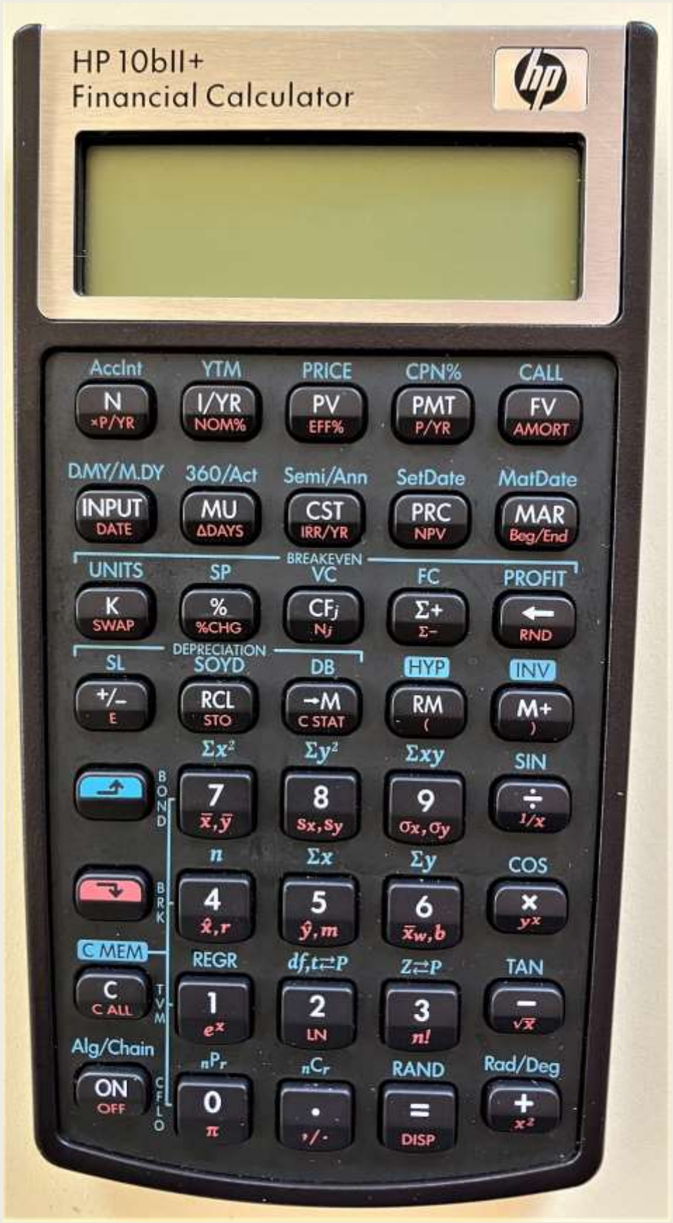
15,000 PV



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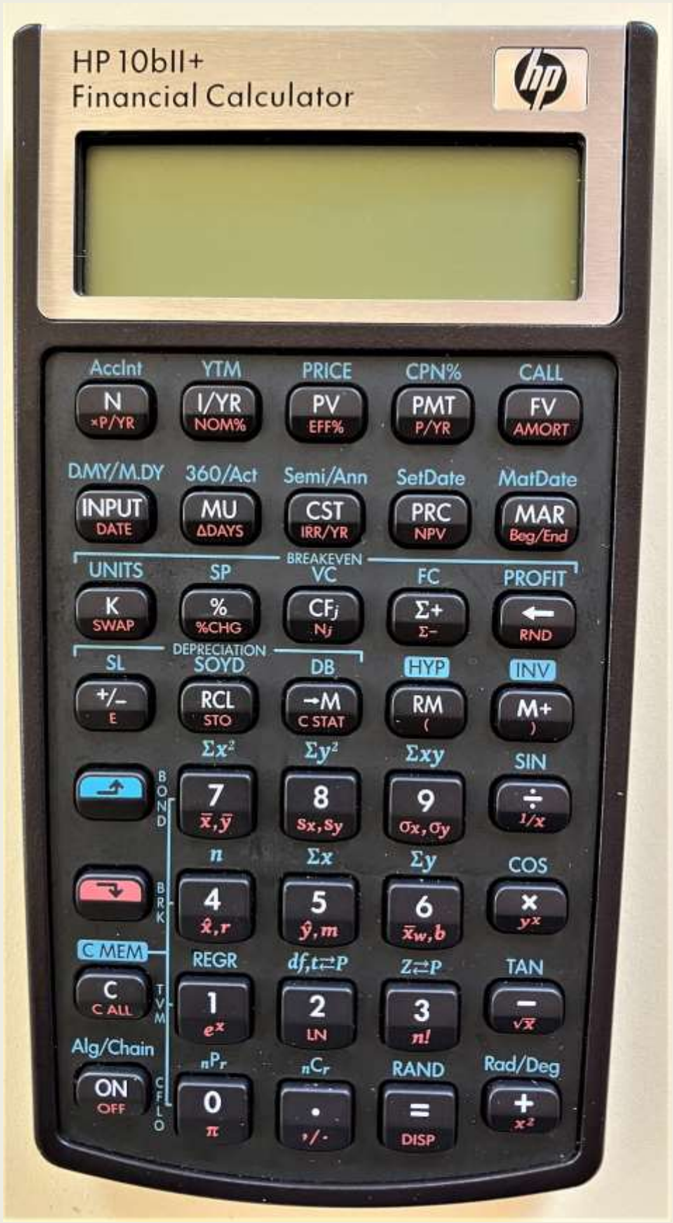
15,000	PV		
48	N		



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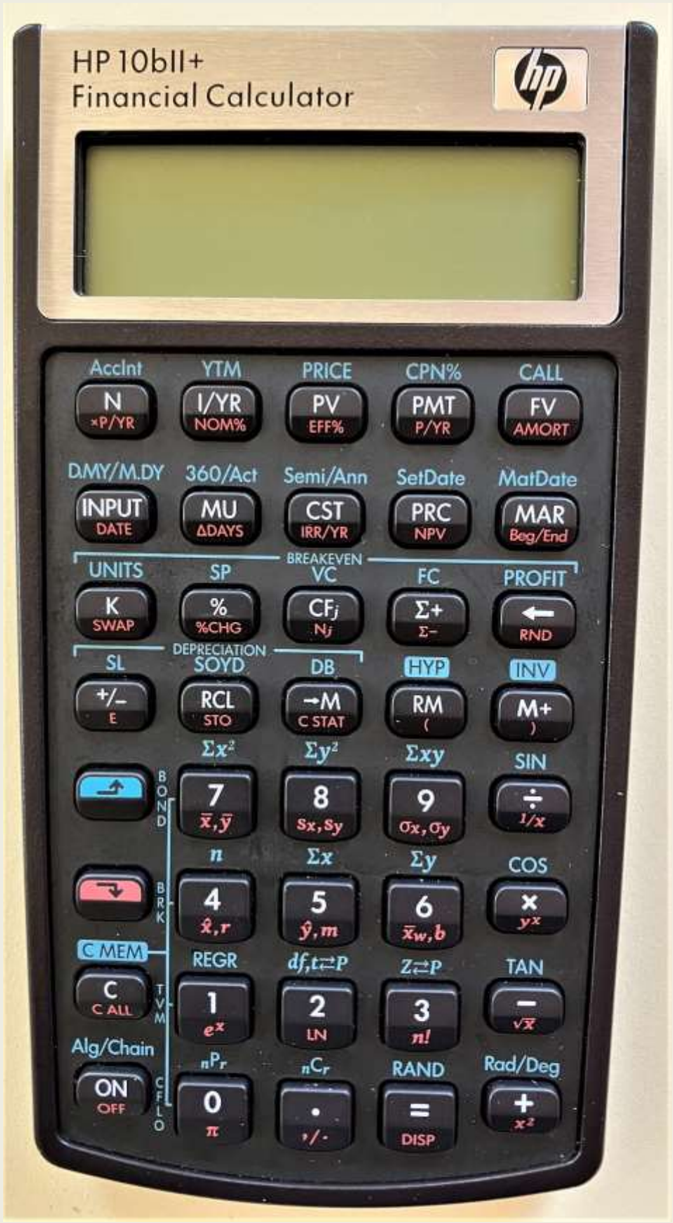
15,000	PV	7.42	I/YR
48	N		



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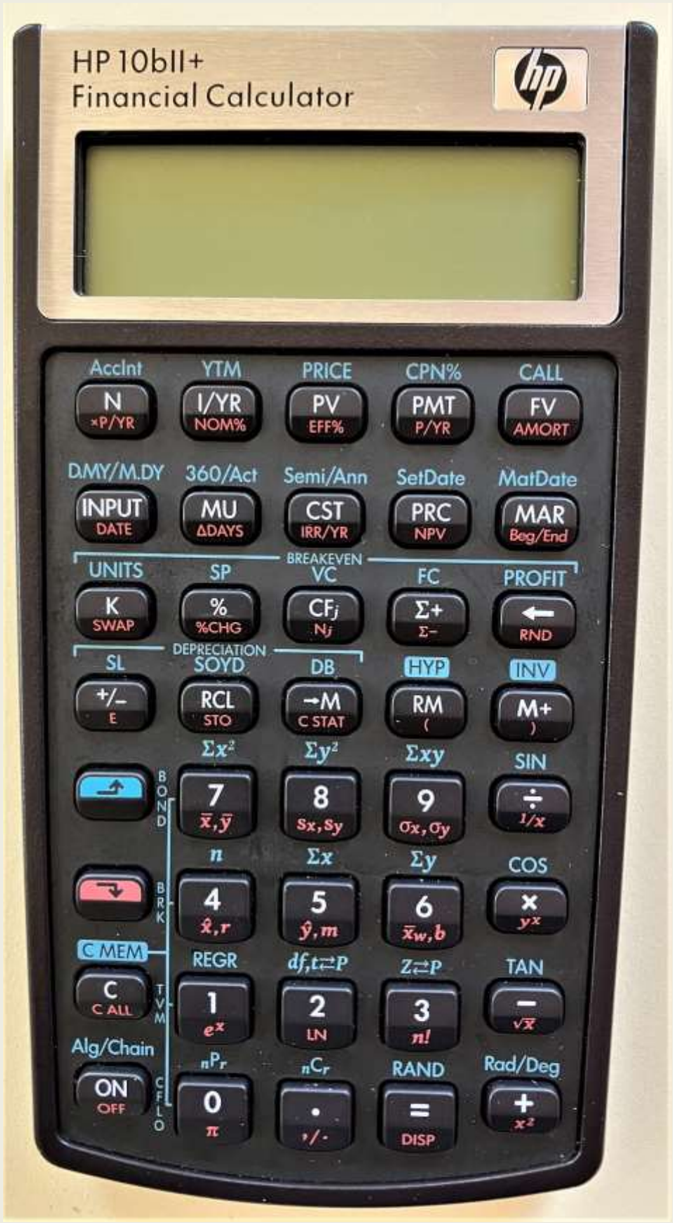
15,000	PV		7.42	I/Y	
48	N			PMT	-362.12



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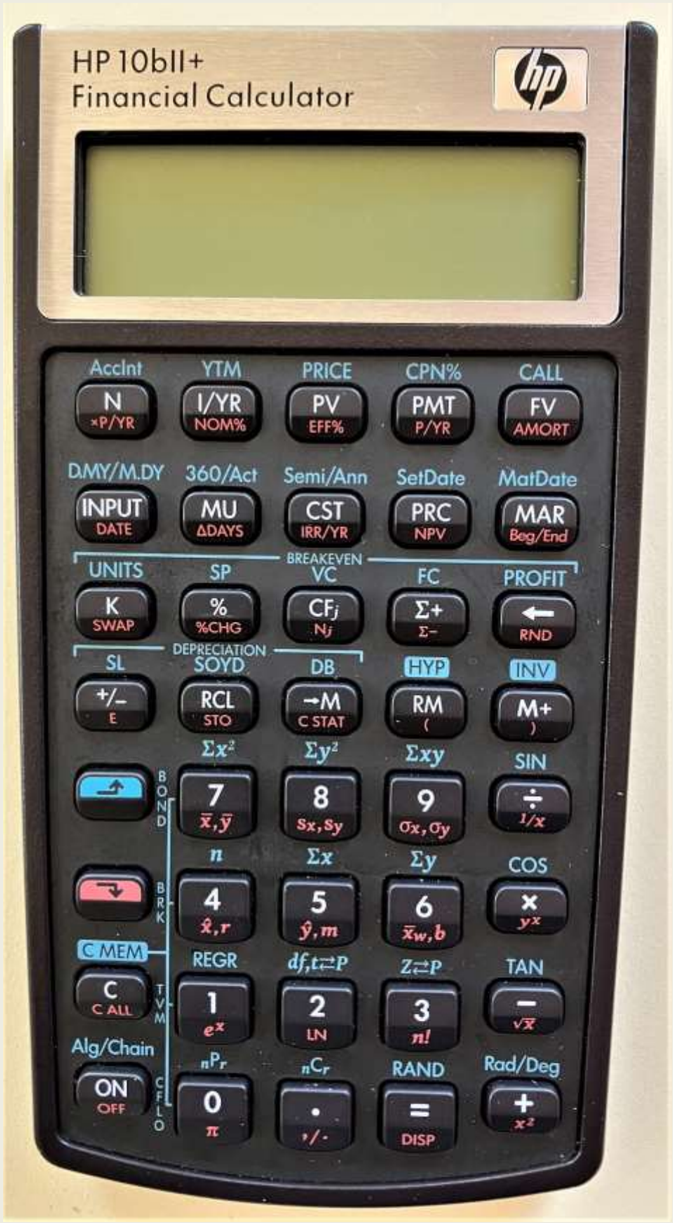
15,000	PV		7.42	I/Y	
48	N		PMT	-362.12	
-300	PMT				



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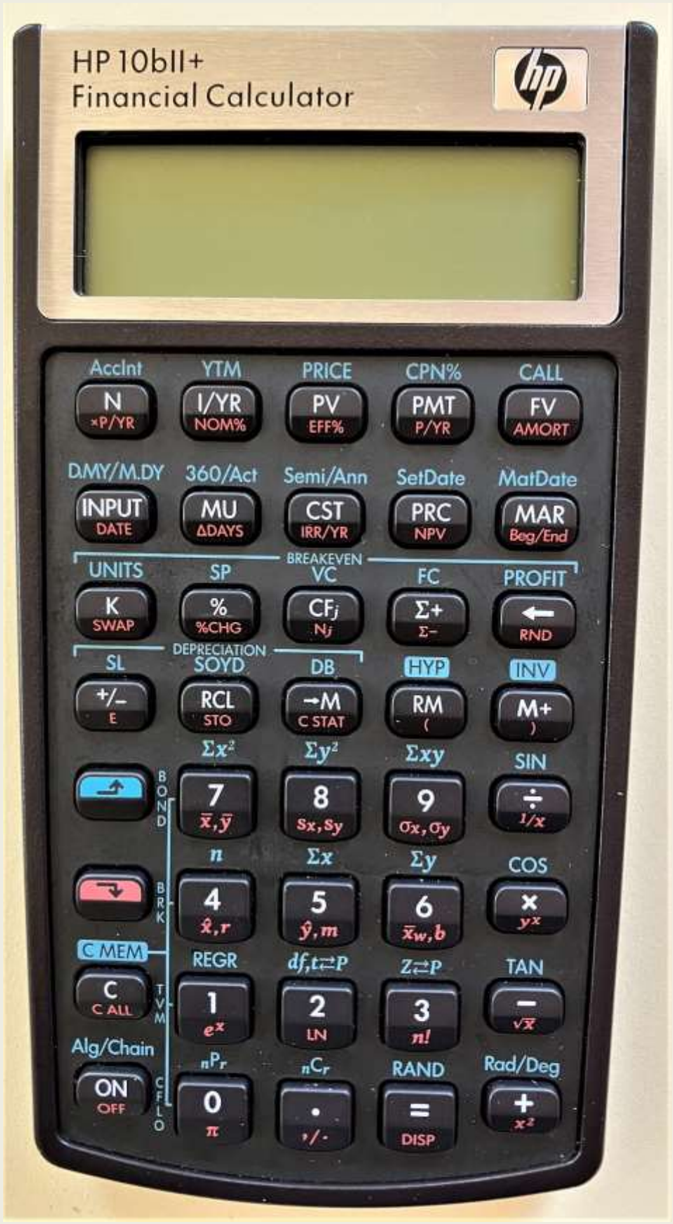
15,000	PV	7.42	I/Y
48	N	PMT	- 362.12
-300	PMT		
		N	60



C7. “Packing” A Car Loan?

First, press the Orange Arrow key, then move your finger down and press the C ALL.

A car dealer offers you the following terms: $12,000 loan, 48 months, 6.5% APR, and payments of $299.27. How much is the lump sum amount of unauthorized upgrades the dealer “packed” into your payment?

12,000 PV

48 N

299.27-
284.58= -14.69 PMT

_____ [ ]

6.5 I/Y

PMT - 284.58

_____ [ ]

PV 619.44

Final Requests/Comments

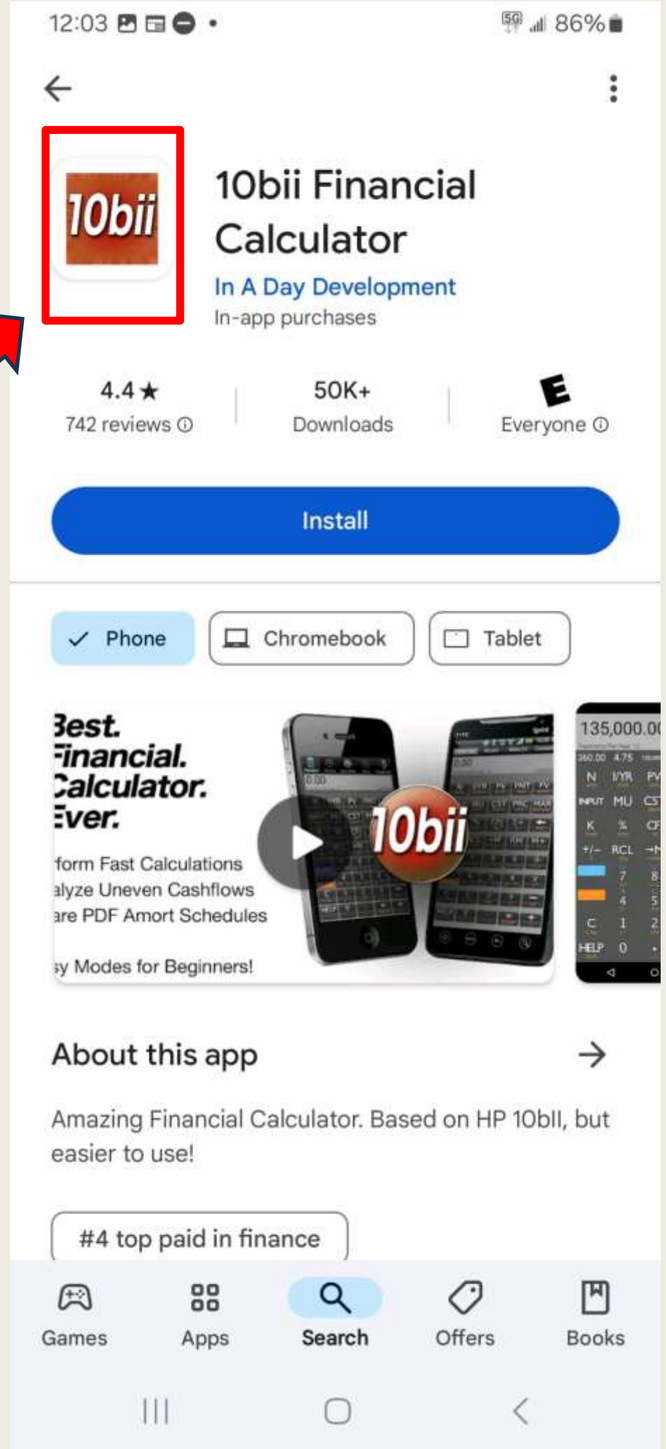
Please turn off the calculators by pressing Down Arrow, then OFF.

Feel free to let me know if you would like to have one of these sessions presented at your school.

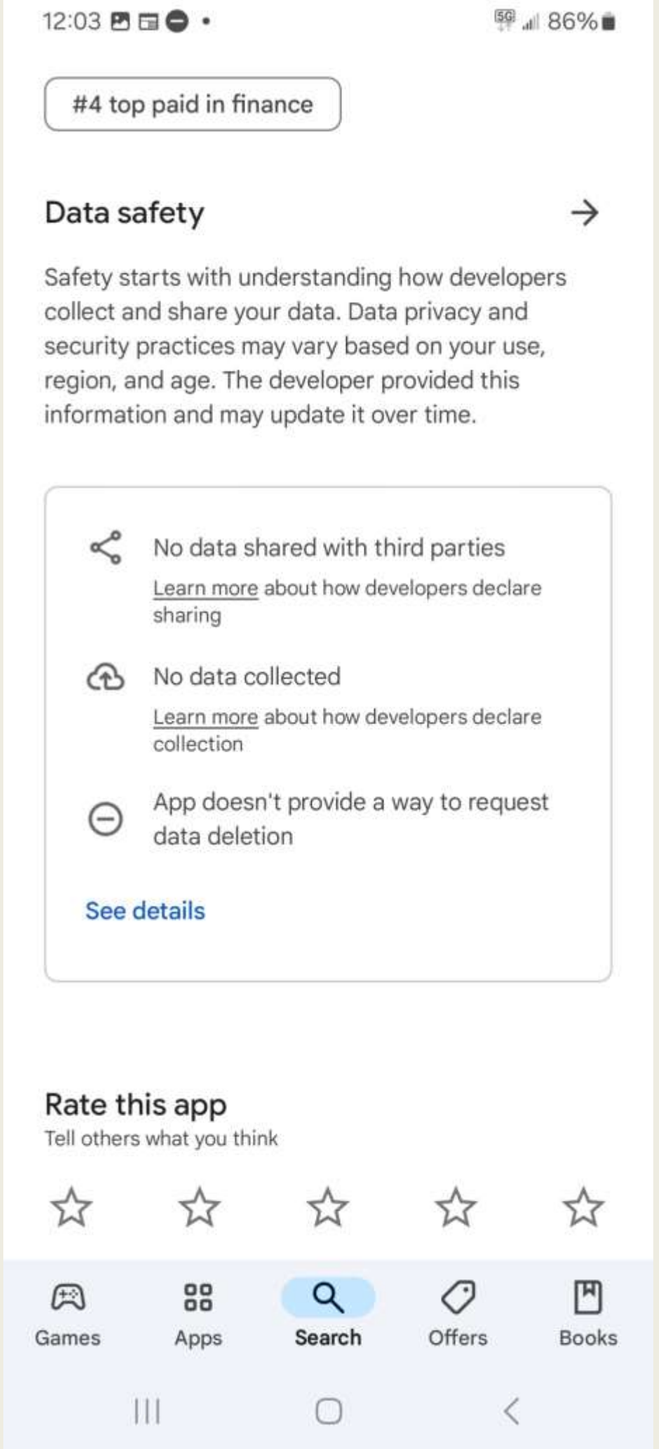
Hope you got more than you anticipated out of your 45 minutes here today!

Next: Raffle for 10bii phone apps

If you are comfortable using this HP financial calculator, and would like to have a near-identically functioning one on your phone, NHP Operating Foundation is sponsoring a raffle for 3 Apple, and 3 Android “10bii” phone apps. More info about this app follows…



Just FYI, there is no financial relationship between the developers of these apps and the presenter(s).



Here is the 10bii app:

No “ON” key needed,
and great “Help” built in

Raffle for 10bii apps

As mentioned, we are sponsoring a raffle for 3 Apple, and 3 Android 10bii phone apps.

The way the raffle works is if you are a winner, you will need to download the $5.99 app. Then upon showing one of the session facilitators the app on your phone, you will be reimbursed $6 in cash. (Believe us, this is the fastest/easiest way to handle the process.)

Here we go…

First, please raise your hand if you have an Android phone and want to download the app. The raffle ticket you are given will have a red stripe on it.

Second, please raise your hand if you have an Apple phone and want to download the app. The raffle ticket you are given will have a green stripe on it.

That’s All, Folks!