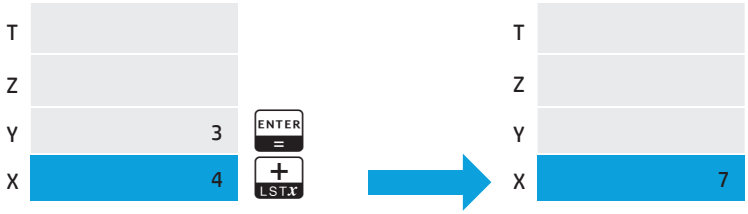
RPN calculates faster.

Get accurate results in less time with the HP 12c.

WHAT IS RPN?

RPN (Reverse Polish Notation) is a mathematical notation that allows users to solve problems by mimicking how they learned to do math on paper. The operators (+,–,x,÷) are placed after the arguments (for example, 3+4 becomes 3 {ENTER} 4 +) allowing users to stack number sequences and operations, working from the bottom up. RPN eliminates the need for parentheses in complex calculations and reduces keystrokes, making problem solving quicker and more efficient.

Pressing an operator key (+ - x ÷) always collapses the bottom two rows of the stack.



Solving a Basic TVM Problem

What is the Future Value of $50 invested today at 3% interest for 5 years?

PV= 50 r = 3% N = 5 FV = ?	**TVM Formula** $FV = PV \times (1 + r)^N$	**Formula with inputs** $FV = 50 \times (1 + .03)^5$

Traditional Calculation Methods

You might think all traditional calculators operate the same way, but there are actually two common operating modes, which require users to input formulas differently.

Chain Mode calculates from left to right without following the Order of Operations.	Chain Algebraic Mode: 50 x (1 + .03^5) =
Algebraic Mode follows the Order of Operations (Please Excuse My Dear Aunt Sally).	Algebraic Mode: 50 x (1 + .03)^5 =
If you're not sure which mode your calculator uses, you likely add extra parentheses to avoid potential errors, making calculations complicated and time consuming.	Mode Unknown: 50 x ((1 + .03)^5)=

RPN Method

RPN breaks equations into simpler components, making them easier to solve. The RPN method requires fewer keystrokes than other modes, making it faster and more efficient.

50	ENTER =
1	ENTER =
.03	+ LST x
5	y^x $\sqrt{x}$ × x

Final Answer: $57.96

Using Built-in Time Value Functions

Though it's best to check your work by solving TVM problems longhand, you can also use the built-in Time Value functions on the 12c for quick results.

STEP 1: f REG CLx x=0 — Clear Registers (if new calculation; otherwise if part of longer previous calculation, don't clear)

STEP 2: 50 CHS DATE PV CFo — Input initial amount, change sign and store as PV

STEP 3: 3 i 12÷ — Input interest rate of 3, store as i%

STEP 4: 5 n 12× — Input number of years and store as N

STEP 5: FV Ni — Calculate FV and display answer: 57.96

Stacking complex calculations:

Calculate the PV of terminal value using the Gordon Growth Model to value a growing perpetuity:

CF_0 = \$100
g = 3%
r = 10%
N = 5 yrs

$$PV = \frac{CF_0 \times (1+g)}{r-g} \Big/ (1+r)^N$$

	f REG CLx	STEP 1: 100 ENTER	STEP 2: 1 ENTER	STEP 3: .03 + LSTx	STEP 4: ×	STEP 5: .1 ENTER
T						
Z						
Y			100.00	100.00		103.00
X		100.00	1.00	1.03	103.00	0.10
	Always begin by clearing the stack	*"100" Entry is stored and remains in the display stack until the next number is entered**	*Entering "1" moves the previous entry to stack 2***	*The "+" operation performs calculation and updates the bottom stack*	*"x" operation multiplies bottom 2 stacks and updates the stack*	*"0.1" Entry is stored and remains in the display stack until the next number is entered*

	STEP 6: .03 –	STEP 7: ÷	STEP 8: 1 ENTER	STEP 9: .05 + LSTx	STEP 10: 5 y^x	STEP 11: ÷
T						
Z						
Y	103.00		1,471.43	1,471.43	1,471.43	
X	0.07	1,471.43	1.00	1.05	1.28	1,152.90
	"–" subtracts .03 from 0.1 and updates bottom stack with result	*"÷" divides stack 2 by stack 1 and displays results. This is undiscounted TV*	*"1" Entry is stored and remains in the display stack until the next number is entered*	*"+" operation performs calculation on the bottom 2 stacks and updates bottom stack*	*"y^x" takes stack 2 and raises it to stack 1 value and updates bottom stack*	**Final Answer:** *Present value of terminal value*

Calculating IRR:

Calculate the IRR of the following series of cash flows:

Cashflows

Year 0:	– 10,000	(initial investment)
Year 1:	+ 750	(dividend)
Year 2:	+ 350	(dividend)
Year 3:	+ 350	(dividend)
Year 4:	+ 350	(dividend)
Year 5:	+ 500	(dividend)
	+ 10,000	(return of capital)

STEP 1:	f REG CLx	Clear Registers
STEP 2:	10,000 CHS DATE	Input initial amount & change sign
STEP 3:	g PV CFo	Input – 10,000 into CF_0
STEP 4:	750 g PMT CFj	Input 750 as first CF period
STEP 5:	350 g PMT CFj	Input 350 as next CF period
STEP 6:	3 g FV Nj	Repeat last entry (350) for 3 CF periods
STEP 7:	10,500 g PMT CFj	Input last year's total CF
STEP 8:	f IRR	4.6477 ➡ final answer, in % terms

Quick Tips for your 12c

1. To set number of decimals displayed: f number: f 4 = four decimal points. To see all significant digits hit f ENTER
2. When calculating PV & FV, use CHS DATE to make PV negative, otherwise an error will be returned
3. For monthly amortization schedules, input interest rate as monthly OR input as annual and use g i 12÷
4. Calculate % in two ways: 50% of \$150: 150 ENTER .5 × OR 150 ENTER 50 % INTG . Both yield the correct answer
5. Use g BEG or g END to set cash flows coming in at the Beg or End of the period in TVM functions
6. Need more than 4 stacks? Use STO ([#] to store the displayed value in memory. Then press RCL) [#] to recall that value
7. Enter large numbers quickly with EEX ΔDYS. Example: 1 EEX ΔDYS 6 ENTER yields 1,000,000
8. To switch the order of the bottom two stacks, press $x \lesseqgtr y$

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* Technically, the "100" is pushed up to the 2nd stack and is also in the 1st bottom "display stack". Thus, if you immediately hit "+" after STEP 1, the result would be "200" which replaces the "display stack".

** Technically, the "1" is pushed up the 2nd stack, the "100" is pushed up the 3rd stack, and the bottom "display stack" is also "1"; if you immediately hit "+" after STEP 2, the result is 2. Hitting "+" again results in "102".

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