



hp calculators

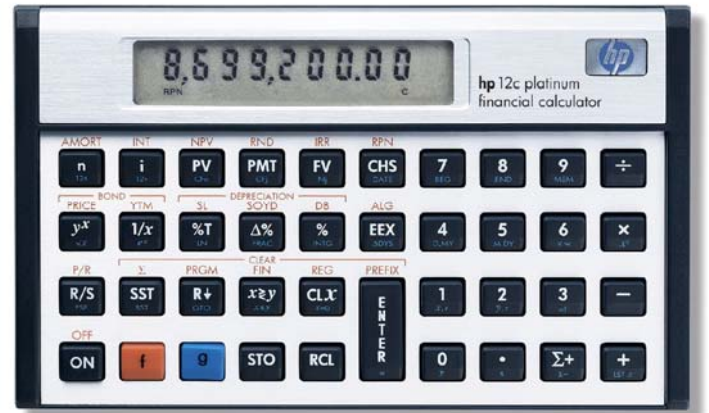
HP 12C Platinum
Basic Arithmetic

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RPN and the order of operations

Algebraic and the order of operations

Practice solving basic arithmetic problems



Basic Arithmetic

Any basic arithmetic problem can be easily solved with the HP12C Platinum's built-in arithmetic functions. Using the efficiency of its Reverse Polish Notation (RPN) logic system or its algebraic operating mode, daily arithmetic problems can be handled and solved quickly.

RPN and the order of operations

Because of its RPN system, functions in the HP12C Platinum are performed as their keys are pressed. Some functions apply to one number only, others return values from two numbers. On the HP12C Platinum, $\boxed{+}$, $\boxed{-}$, $\boxed{\times}$, $\boxed{\div}$ and $\boxed{y^x}$ apply to two already entered numbers. As a general rule, both numbers are entered in a sequence and are separated by pressing $\boxed{\text{ENTER}}$ before pressing the two-numbered function. If one of the numbers is already in the display as a result from any previous operation, simply enter the second number and execute the function.

Algebraic and the order of operations

On the HP12C Platinum in algebraic mode, functions are performed as their keys are pressed. Some functions apply to one number only, others return values from two numbers. On the HP12C Platinum, $\boxed{+}$, $\boxed{-}$, $\boxed{\times}$, $\boxed{\div}$ and $\boxed{y^x}$ work with two numbers. Enter the first number, press the proper function key, enter the second number and then press the $\boxed{=}$ key. Functions that operate on one number perform their function on a number just entered or a value already showing in the display. The algebraic mode of the HP12C Platinum performs operations as you enter them as soon as the calculator has enough information to perform the function.

For example, the expression $1 + 2 \times 3 =$ will be evaluated by the HP12C Platinum as follows: (1) Entering $\boxed{1} \boxed{+} \boxed{2} \boxed{\times}$ will cause the HP12C Platinum to solve $1 + 2$ (yielding a value of 3) and be ready to multiply this intermediate result by the next number entered. (2) When the $\boxed{3} \boxed{=}$ keys are pressed, the HP12C Platinum will multiply the previous intermediate result by 3 to provide the answer of 9.

Practice solving basic arithmetic problems

Example 1: Evaluate $1/x$ given $x=7.2$

Solution: The reciprocal ($1/x$) is categorized as a one-number function, so all that is required is to enter the number and press the function key:

$\boxed{7} \boxed{\cdot} \boxed{2} \boxed{1/x}$



0.14

Figure 1

Answer: The reciprocal of 7.2 is 0.14.

Example 2: Evaluate both $10 \times 3.5 - 4$ and $10 \times (3.5 - 4)$ and compare the results.

Solution: The first expression can be evaluated with the following keystroke sequence:

In RPN mode: $\boxed{1} \boxed{0} \boxed{\text{ENTER}} \boxed{3} \boxed{\cdot} \boxed{5} \boxed{\times} \boxed{4} \boxed{-}$
 In algebraic mode: $\boxed{1} \boxed{0} \boxed{\times} \boxed{3} \boxed{\cdot} \boxed{5} \boxed{-} \boxed{4} \boxed{=}$



Figure 2

The second expression can be evaluated with the following keystroke sequence:

In RPN mode: $\boxed{3} \boxed{\cdot} \boxed{5} \boxed{\text{ENTER}} \boxed{4} \boxed{-} \boxed{1} \boxed{0} \boxed{\times}$
 In algebraic mode: $\boxed{3} \boxed{\cdot} \boxed{5} \boxed{-} \boxed{4} \boxed{\times} \boxed{1} \boxed{0} \boxed{=}$



Figure 3

Answer: The first expression evaluates to 31 while the second one evaluates to -5. Note that in algebraic mode, the second expression is calculated from the “inside-out.”

Example 3: Evaluate: $\frac{30 - 3.5 \times 5}{2}$

Solution: The precedence of the operators implies that multiplication must be performed prior to subtracting:

In RPN mode: $\boxed{3} \boxed{0} \boxed{\text{ENTER}} \boxed{3} \boxed{\cdot} \boxed{5} \boxed{\text{ENTER}} \boxed{5} \boxed{\times} \boxed{-} \boxed{2} \boxed{\div}$
 In algebraic mode: $\boxed{3} \boxed{\cdot} \boxed{5} \boxed{\times} \boxed{5} \boxed{=} \boxed{3} \boxed{0} \boxed{-} \boxed{\text{x}\approx\text{y}} \boxed{=} \boxed{\div} \boxed{2} \boxed{=}$

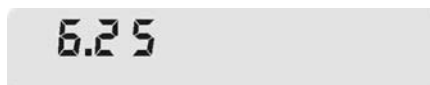


Figure 4

Example 4: Compute the numerator of $\frac{((10 - 3.5) \times 5 - 7.2) \times 4}{2 + 4.7 \div 3}$ and then evaluate the complete expression.

Solution: The following keystroke sequence is used to find the numerator:

In RPN mode: $\boxed{1} \boxed{0} \boxed{\text{ENTER}} \boxed{3} \boxed{\cdot} \boxed{5} \boxed{-} \boxed{5} \boxed{\times} \boxed{7} \boxed{\cdot} \boxed{2} \boxed{-} \boxed{4} \boxed{\times}$
 In algebraic mode: $\boxed{1} \boxed{0} \boxed{-} \boxed{3} \boxed{\cdot} \boxed{5} \boxed{\times} \boxed{5} \boxed{-} \boxed{7} \boxed{\cdot} \boxed{2} \boxed{\times} \boxed{4} \boxed{=}$



Figure 5

The following keystroke sequence is used to resume the calculation:

In RPN mode: $4 \cdot 7 \text{ ENTER } 3 \div 2 + \div$

In algebraic mode: $4 \cdot 7 \div 3 + 2 = \div x \approx y x \approx y =$



Figure 6

Answer: The expression evaluates to **28.37** and its numerator returns **101.20**.