

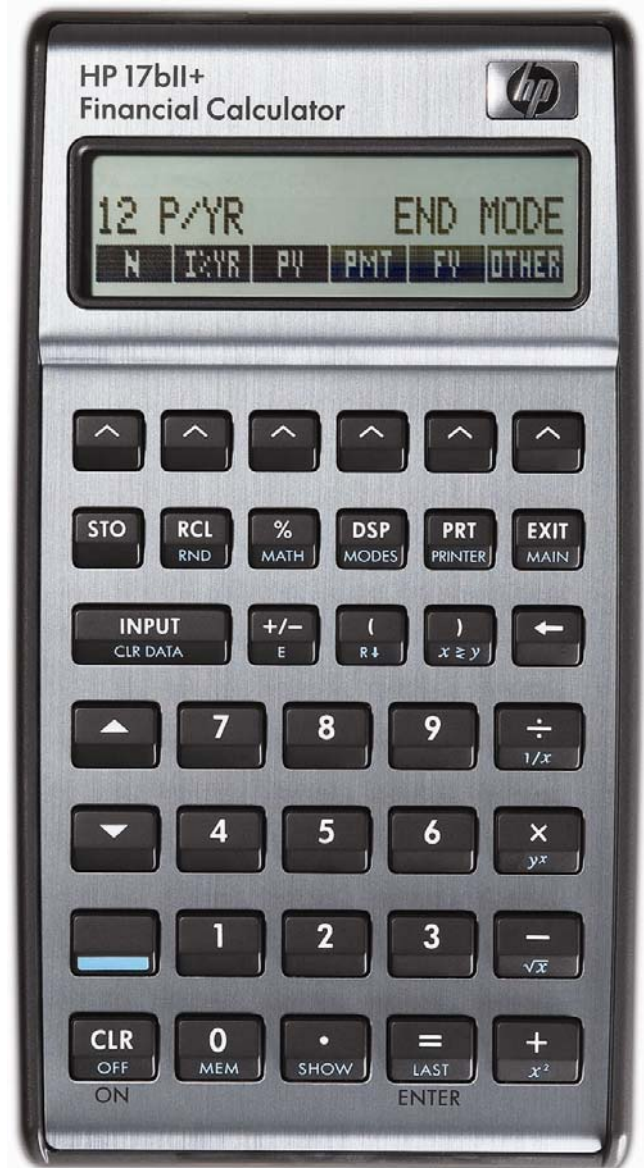


hp calculators

HP 17bII+ Using math functions

The HP 17bII+ math function menu

Practice solving problems



The HP 17bII+ math function menu

The HP 17bII+ has many basic and advanced mathematic functions built-in. These functions can solve a variety of problems.

These functions include some functions found on the keyboard, such as $\frac{1}{x}$, x^y , \sqrt{x} , $x^{\frac{1}{y}}$. There are also additional math functions found in the $\frac{\%}{\text{MATH}}$ (math) menu, such as the common and natural logs and antilogs LOG , LN , EXP , as well as factorial N! . This menu also includes the constant PI .

Practice solving problems

Example 1: How many different groups of 3 items can you select from 10 total items? The order of selection does not matter – just the resulting grouping.

Solution: Given the way this example is worded, we will need to solve for the combinations of n items taken r at a time. If the order of selection mattered, we would solve for the permutation of n items taken r at a time.

To determine the number of ways you can select a subgroup of a specified number of items from a larger group, where the order of each of the items in the subgroup is not important, the combination formula is used, as shown in figure 1 below. The formula indicates the combinations of n items taken r at a time.

$$\text{Combination} = \frac{n!}{r!(n-r)!}$$

Figure 1

In algebraic mode, press : $\frac{\%}{\text{MATH}}$ $\frac{1}{\text{MEM}}$ $\frac{0}{\text{MEM}}$ $\frac{\text{N!}}{\text{N!}}$ $\frac{\div}{\div}$ $\frac{(\text{3}}{\text{R+}}$ $\frac{\text{N!}}{\text{N!}}$ $\frac{\times}{\times}$ $\frac{(\text{10}}{\text{R+}}$ $\frac{0}{\text{MEM}}$ $\frac{-}{\sqrt{x}}$ $\frac{3}{\text{R+}}$ $\frac{)}{\text{R+}}$ $\frac{\text{N!}}{\text{N!}}$ $\frac{=}{\text{LAST}}$

In RPN mode, press : $\frac{\%}{\text{MATH}}$ $\frac{1}{\text{MEM}}$ $\frac{0}{\text{MEM}}$ $\frac{\text{N!}}{\text{N!}}$ $\frac{3}{\text{N!}}$ $\frac{\text{N!}}{\text{N!}}$ $\frac{1}{\text{MEM}}$ $\frac{0}{\text{MEM}}$ $\frac{\text{INPUT}}{\text{CLR DATA}}$ $\frac{3}{\sqrt{x}}$ $\frac{-}{\text{N!}}$ $\frac{\times}{\times}$ $\frac{\div}{\div}$



Answer: 120 different groups of 3 items can be selected from a group of 10 items.

Example 2: Find $e^{4.5}$.

Solution: In algebraic or RPN mode, press : $\frac{\%}{\text{MATH}}$ $\frac{4}{\text{SHOW}}$ $\frac{5}{\text{EXP}}$

Answer: 90.02.

Example 3: What is the factorial of 7?

Solution: In algebraic or RPN mode, press : $\frac{7}{\text{N!}}$

Answer: 5040.

Example 4: Evaluate: $1 \div (4^3 - 7^2)$

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Solution: In algebraic mode, press :

In RPN mode, press :

Answer: 0.07 (to more decimal places, the answer is 0.0666666666667).

Example 5: What is the natural log of PI divided by 2?

Solution: In algebraic mode, press :

In RPN mode, press :

Answer: 0.45 (to more decimal places, the answer is 0.451582705286).

Example 6: Evaluate: $1 + (2 \times (3^4)) = ?$

Solution: The way the expression is written,

In algebraic mode, press :

In RPN mode, press :

Answer: 163. Note that parentheses are required in algebraic mode, but not in RPN mode.

Example 7: If you flip a coin 10 times, what is the probability that it comes up tails exactly 4 times?

Solution: This is an example of the binomial probability distribution. The formula to find the answer is given by:

$$P(X) = nC_x \times p^x \cdot (1-p)^{(n-x)}$$

Figure 3

where P(X) is the probability of having X successes observed, nCx is the combination of n items taken x at a time, and p is the probability of a success on each trial.

In algebraic mode, press :

In RPN mode, press :

Answer: 0.21. If you flip a coin 10 times, there is a 20.51% chance of seeing heads 4 times.



Figure 4