



## hp calculators

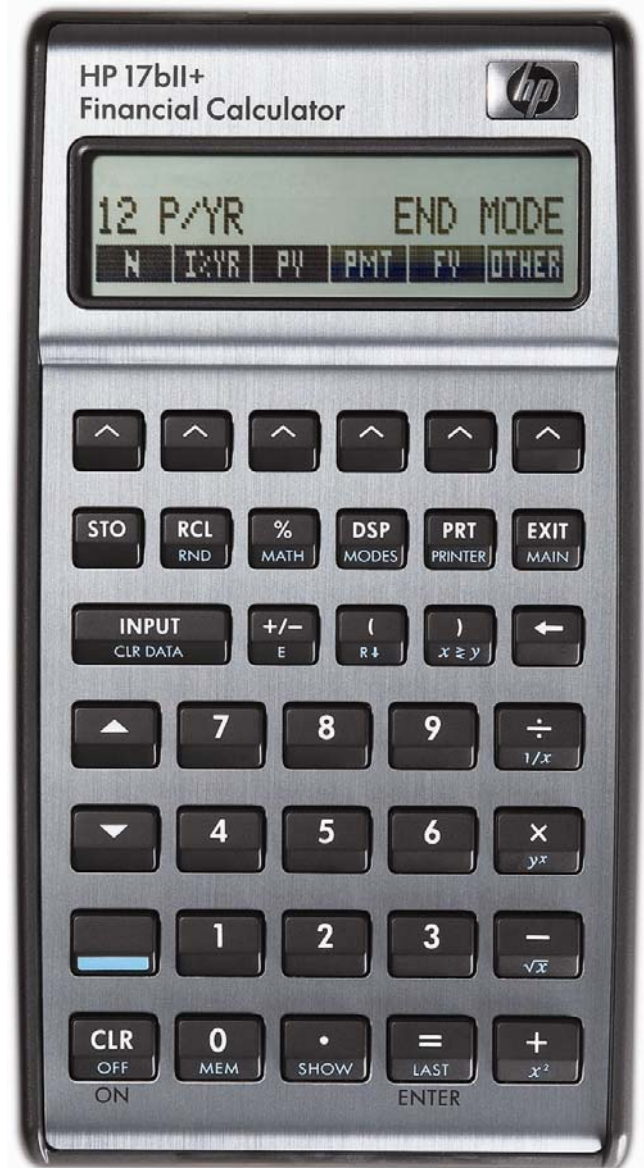
### HP 17bII+ Basic Arithmetic

Basic Arithmetic

Order of Operations

Use of Parentheses

Practice solving basic arithmetic problems



## Basic Arithmetic

The HP 17bII+ can solve basic arithmetic problems with ease. Problems are solved using the built-in arithmetic function keys.

### Order of Operations

In algebraic mode, the HP 17bII+ solves problems by evaluating functions in the order in which they are entered. For example, the calculation  $1 + 2 \times 3 =$  will be solved by the HP 17bII+ by first pressing  $\boxed{1} \boxed{+} \boxed{2} \boxed{\times}$  at which point, the HP 17bII+ will evaluate the  $1 + 2$  part of the calculation, generating the intermediate answer of 3. Then pressing  $\boxed{3} \boxed{=}$  will cause the HP 17bII+ to multiply the intermediate answer of 3 by 3 to get the final result of 9.

### Use of Parentheses

If you wish to change the order of execution of functions, then you can use parentheses to tell the HP 17bII+ to perform certain functions before others. For example, to evaluate the calculation  $1 + 2 \times 3 =$  so that the multiplication is performed before the addition, press:  $\boxed{1} \boxed{+} \boxed{(} \boxed{2} \boxed{\times} \boxed{3} \boxed{)} \boxed{=}$  and the result of 7 will be displayed (note that to access the parentheses, the yellow shift key must be pressed in the keystroke list above). In this case, the parentheses told the HP 17bII+ to evaluate the calculation starting inside the parentheses and working outward. Note that inside parentheses, the HP 17bII+ will evaluate calculations in the order in which they are entered, unless another level of parentheses is used.

### RPN mode

In RPN mode, the HP 17bII+ executes an operation when the key representing the function is pressed. For example, the calculation  $1 + 2 \times 3 =$  is solved by the HP 17bII+ in RPN mode by first pressing  $\boxed{1} \boxed{\text{INPUT CLR DATA}} \boxed{2} \boxed{+}$  which evaluations  $1+2$ . (Note: The INPUT key serves to separate two numbers for functions of two arguments. The  $\boxed{=}$  key, which has ENTER written below it, may also be used for this purpose). To multiply this intermediate result by 3, press  $\boxed{3} \boxed{\times}$ . Note as well that any potential confusion arising from the order of operations is eliminated by the use of RPN mode. Operations are always performed when the function key is pressed – no parentheses are needed either.

If you wish to evaluate  $1 + 2 \times 3 =$  using the normal “multiplication and division first” rule, then the keys to press in RPN mode would be  $\boxed{2} \boxed{\text{INPUT CLR DATA}} \boxed{3} \boxed{\times}$  then press  $\boxed{1} \boxed{+}$ .

### Practice solving basic arithmetic problems

Example 1: Evaluate:  $5 + 4 \div 3 \times 2 - 1$

Solution: In algebraic mode, press:  
 $\boxed{5} \boxed{+} \boxed{4} \boxed{\div} \boxed{3} \boxed{\times} \boxed{2} \boxed{-} \boxed{1} \boxed{=}$

In RPN mode, press:  
 $\boxed{5} \boxed{\text{INPUT CLR DATA}} \boxed{4} \boxed{+} \boxed{3} \boxed{\div} \boxed{2} \boxed{\times} \boxed{1} \boxed{-}$

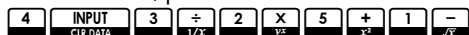
Answer: 5.

Example 2: Evaluate:  $5 + 4 \div 3 \times 2 - 1$  making sure that multiplication and division are performed first.

Solution: In algebraic mode, press:



In RPN mode, press:



Answer: 6.67.

Example 3: Evaluate:  $1 - \left( \frac{1}{(4 - (2 \times 3))} \right)$

Solution: In algebraic mode, press:



In RPN mode, press:



Answer: 1.5.

Note that in algebraic mode, there is no need to key the closing parentheses keys. Pressing will automatically supply them to the calculator.

Note that in RPN mode, the key performs the X<>Y function which swaps the numeric arguments on the RPN stack. There is no need to press the shift key to perform this function when in RPN mode. Also note that the use of multiple INPUT key presses in the RPN sequence of this example loads the RPN stack with numeric arguments which are used by the key sequence.

Example 4: Evaluate  $-3 \times 5 + -4$

Solution: Note that this problem involves negative numbers entered by keying in the number and then pressing the key to make it negative.

In algebraic mode, press:



In RPN mode, press:



Answer: -19.