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National Semiconductor

INTERNATIONAL
COMPUTER
INSTRUCTION MANUAL
NS6010

NS6010
MANUEL D'UTILISATION
INTERNATIONAL
CALCULATEUR

National
Semiconductor

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PRINTED IN HONG KONG

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P/N 103074

Getting Started

Turn your Model 6010 on with the switch on the left side of the calculator. The calculator is automatically cleared and the display should now show 0. If it does not, check to see if the batteries are properly connected.

Battery Installation

Your Model 6010 is powered by a 9-volt transistor battery which should give you about two months of operation with normal use. The International Computer will show a decimal point on the extreme left side of the display as a low-battery indicator. Although calculations can still be made while the low-battery indicator is on, the battery should be replaced as soon as possible. Continued use on a weak battery may result in inaccurate answers. To change batteries, turn the machine over, place a small coin in the slot at the top of the battery door and gently pull toward you. The battery door will slip out. **BE SURE YOUR CALCULATOR IS TURNED OFF BEFORE REPLACING THE BATTERY.** Slip the bottom of the door back in place and, squeezing gently on the two prongs on the door, snap it back in place.

AC Adaptor

You can use your Model 6010 on regular AC current by connecting the DC920 AC Adaptor to the jack at the top of the machine. **BE SURE YOUR CALCULATOR IS TURNED OFF BEFORE CONNECTING THE ADAPTOR.**

Keyboard Layout

Single function keys and the upper functions on double function keys have their functions defined in lettering above the key. They will be represented in this manual by \square . Lower functions on the double function keys have their functions defined in lettering below the key. They will be represented in this manual by parentheses. To access lower functions ($1/x$, $\sqrt{\quad}$, π), touch \swarrow then the desired key.

OPERATION

Display, Overflow and Error Indicator

The Model 6010 will accept and display any positive or negative number between 0.0000001 and 99999999. Any result larger than 99999999 or smaller than -99999999 or any logic error (i.e., division by zero) will result in an error indicated by all zeros and decimal points showing in the display. Touching \downarrow will clear the error indication permitting further calculations.

Automatic Display Shutoff

To save battery life, the 6010 will shut off the display and show all decimal points if no key has been touched for approximately 25 seconds. No data has been changed and further entries or operations will bring back the display. To restore the display without changing its contents, touch **CHS** twice.

\downarrow key — touched before a function key, one touch of \downarrow clears the present number entry, brings back the number previously in the display and enables you to continue calculations;

two touches of **C↓** clears everything but memory. Touched after a function key, one touch of **C↓** clears everything but memory.

CHS key — changes the sign of the number in the display.

Negative Numbers

To enter a negative number, key in the desired number and touch **CHS**.

Performing Calculations

For maximum calculating flexibility, your **6010** uses business logic for solving problems. Addition and subtraction are performed arithmetically, which simply means you don't need to use an equals key to get an answer. The benefit to you is the ability to add or subtract the same number repeatedly by just touching the **+** or **-** key. You can make instant, trouble-free corrections of entry errors, and solve many problems in fewer keystrokes. This gives you a great advantage when working with long columns of figures, and because you get credit balances automatically, and automatic round off at two decimal places, your **6010** is ideal for dollars-and-cents calculations.

Multiplication and division problems are performed algebraically. In other words, you do the problem exactly as you'd say it. This simplifies your approach to problems involving chain calculations, percentages and more complex equations.

So your **6010** gives you the optimum combination of logic systems. You can tackle each type of problem in the most efficient

way. You get fast and easy answers because you can apply computation power normally found only in more expensive desk-top calculators.

Full 8 Digit Answers:

Floating Decimal

To get full 8 digit answers:

Do not press **=** upon completion of multiplication or division problems. Instead press **X** or **÷** at the end of a problem so that the answer is not cut off at two decimal places.

Example:

Key in	Display Shows	Comments
C↓	0.	
1.23456 X	1.23456:	
5.678 X	7.0098316	Press X or ÷ instead of = to see all 8 digits of the result.

Addition and Subtraction

The **6010** adds and subtracts the same way as the traditional adding machine. The **+** key adds the last entry to whatever is already in the machine, and the **-** key subtracts the last entry. Example: 2 **+** 3 **+** displays 5. Touch **C↓** to clear between addition problems, and 7 **+** 3 **-** displays 4.

The **6010** is in ADDITION mode whenever the last function touched is **+** or **-**. When the calculator is in the ADDITION mode, the last entry is set up for repeat operations.

Example: Add 5 + 2 + 2 + 2:

Key In	Display Shows	Comments
5	5	
+	5.	
2	2	
+	7.	
+	9.	Automatic repeat addition.
+	11.	Automatic repeat addition.
C ↓	0	Clear between addition problems.

Example: Subtract $18 - 3 - 3 - 3$:

Key In	Display Shows	Comments
18	18	
+	18.	
3	3	
-	15.	
-	12.	Automatic repeat subtraction.
-	9.	Automatic repeat subtraction.
C ↓	0	Clear between subtraction problems.

Multiplication and Division

Multiplication and division problems are done algebraically, that is, you do the problem exactly as you'd say it.

Example: $5 \times 4 =$ displays 20.

$8 \div 4 =$ displays 2.

$2 \times 3 \times 4 \div 6 =$ displays 4.

The **6010** is in CHAIN mode whenever the last function touched is \times or \div .

When CHAIN mode has been established

with the \times key, the calculator retains the first factor for constant multiplication.

Example: Multiply 3×4 ; 3×5 and $3 \times (-6.21)$:

Key In	Display Shows	Comments
3	3	
\times	3.	Set CHAIN multiplication mode
4	4	
=	12.	
5	5	
=	15	Automatic first factor constant multiplication, constant is $3 \times$.
6.21 CHS	-6.21	
=	-18.63	Automatic first factor constant multiplication, constant is $3 \times$.

When the CHAIN mode has been established with the \div key, the calculator retains the second factor for constant division.

Example: Divide 12 by 6; 20 by 6 and 1.8 by 6:

Key In	Display Shows	Comments
12	12	
\div	12.	
6	6	
=	2.	
20	20	

= 3.33 Automatic second factor constant division, constant is ÷ 6 .

1.8 1.8
= .3 Automatic second factor constant division, constant is ÷ 6 .

= + 20. Result is displayed and added to memory.

MR 26. Recall total from memory.

MC 26. Clear memory for next example.

Example: Bring the following invoices forward and find the grand total:

Memory

- M+** key — adds the number in the display to the number in memory. To subtract the number in the display from memory, touch **CHS** then **M+**
- = +** key — completes a CHAIN mode calculation and adds the result to memory. To subtract the result from memory, touch **CHS = +**
- MR** key — recalls the number in memory to the display.
- MC** key — clears memory.

Example: Calculate the sum of products (2 × 3) + (4 × 5):

Key In	Display Shows	Comments
2	2	
X	2.	
3	3	
= +	6.	Result is display and added to memory.
4	4	
X	4.	
5	5	
	7	

Qty.	Desc.	Unit Price	Net Price
5	Item A	1.25	?
7	Item B	1.188	?
4	Item C	.31	?
	GRAND TOTAL		?

Key In	Display Shows	Comments
5	5	
X	5.	
1.25	1.25	
= +	6.25	Net price for Item A. Total is added to memory.
7	7	
X	7.	
1.188	1.188	
= +	8.32	Automatic round off to two decimal places. Net price for item B. Total is added to memory.
4	4	
X	4.	
.31	.31	
= +	1.24	Net price for item C. Total is added to memory.
	8	

MR	15.81	Recall grand total from memory.
MC	15.81	Clear memory.

6	6	
%	23.66	Amount of tax.
+	417.91	Net price.

Percentage Calculations

Your 6010 has a true "live" percent key enabling you to do percentages, "add-on" calculations and variable percentage problems.

Note: Since your International Computer allows for variable percentage problems, it is advisable to clear the machine with two touches of **C|** between percentage problems.

Example: What is 25% of 152?

Key In	Display Shows	Comments
153	153	
X	153.	
25	25	
%	38.25	

"Add-on" Calculations

Example: How much would you pay for merchandise costing \$475 if you got a 17% discount and there was 6% sales tax?

Key In	Display Shows	Comments
475	475	Cost of merchandise.
X	475.	
17	17	
%	80.75	Amount of discount.
-	394.25	Net before tax.
X	394.25	

Square Root and Squaring

Square roots are calculated by entering the desired number and touching $\sqrt{\quad}$ ($\sqrt{\quad}$). Squares are calculated by entering the desired number and touching $\times =$. If you want to add the square to memory, enter the desired number and touch $\times =+$.

Example: What is the square root of 25?

Key In	Display Shows	Comments
25	25	
$\sqrt{\quad}$	25	
($\sqrt{\quad}$)	5.	

Reciprocals

To calculate the reciprocal of a number, enter the desired number, touch $\sqrt{\quad}$ then (1/x).

Example: What is the reciprocal of 2?

Key In	Display Shows	Comments
2	2	
$\sqrt{\quad}$	2.	
(1/x)	.5	

Entering π

Pi (3.1415927) can be entered directly into the display by touching $\sqrt{\quad}$ (π).

CONVERSIONS

Your **6010** can perform over 40 international measurement conversions. All conversions are in the form **a ↗ b**.

Double Function Conversion Keys

Measurement conversions on double function keys are accessed by touching ↗ or ↘ prior to touching the desired conversion key. To convert from measurement a to measurement b, touch ↗ **a ↗ b**. To convert from measurement b to measurement a, touch ↘ **a ↗ b**.

Example: How many liters would it take to fill your gas tank if it has a 15 U.S. gallon capacity?

Key In	Display Shows	Comments
15	15	Number of U.S. gallons tank holds.
↗ (gal ↗ lit)	56.77998	Number of liters to fill up.

Example: A firm wants to put up a plant that would measure 473 feet by 1,550 feet. How many acres of land will the plant occupy?

Key In	Display Shows	Comments
473	473	
X	473.	
1550	1550	
=	733150.	Total square footage of plant.
↘ (ac ↗ ft ²)	16.830808	Total acreage firms should acquire.

Example: A doctor in London has told you you have a temperature of 37°C. Should you be alarmed?

Key In	Display Shows	Comments
37	37	Body temperature in °C.
↘ (°F ↗ °C)	98.6	Body temperature in °F. No cause for alarm!

Single Function Conversion Keys

The six conversion keys in the top two rows (in/mm, in/cm, ft/in, ft/m, yd/m, and mi/km) are single function keys. That is, there are no other functions accessed by touching these six keys. Touching a single function conversion key assumes converting from measurement a to measurement b. You do not need to touch ↗. To convert from measurement b to measurement a, touch ↘ **a ↗ b**.

Example: How many centimeters are in one inch?

Key In	Display Shows	Comments
1	1	
in ↗ cm	2.54	

Example: How many feet are in 4 meters?

Key In	Display Shows	Comments
4	4	
↘ ft ↗ m	13.123359	

Square and Cubic Measurement Conversions

The six single function conversions are linear measurement conversions. Therefore, you can make square or cubic conversions simply by touching the appropriate conversion key two or three times respectively.

Example: How many square feet of floor space would 180 1-inch by 1-inch boxes take up?

Key In	Display Shows	Comments
180	180	Number of square inches.
↙ ft ↘ in	15.	
↙ ft ↘ in	1.25	Number of square feet.

Example: How many 1-inch ice cubes can you make out of block of ice 3 feet on an edge?

Key In	Display Shows	Comments
3 × = =	27.	Number of cubic feet of ice.
ft ↘ in	324.	
ft ↘ in	3888.	
ft ↘ in	46656.	Number of ice cubes made.

User Definable Conversions

The 6010 has a unique user definable double function conversion key enabling you to enter and convert to any conversion constant you wish.

sto K key — stores user definable conversion constant.

↗ K key — converts measurement in display to user defined measurement.

Example: How many degrees are in 2.4 radians?

Key In	Display Shows	Comments
57.29578	57.29578	Conversion factor.
sto K	57.29578	Store as a user definable conversion constant.
2.4	2.4	Number of radians.
↗ (↗ K)	137.50992	Number of degrees.

This is a list of conversions offered on your calculator

in/mm	inches to millimeters
in/cm	inches to centimeters
in/ft	inches to feet
ft/m	feet to meters
yd/m	yards to meters
mi/km	miles to kilometers
psi/atm	pounds per square inch to atmospheres
mph/kts	miles per hour to knots
ft ³ /gal	feet cubed to U.S. gallons
gal/Imperial gal	U.S. gallons to imperial gallons
ac/ft ²	acres to feet squared
ac/hect	acres to hectares
gal/lit	U.S. gallons to liters
qt/lit	U.S. quarts to liters
fl oz/cc	U.S. fluid ounces to cubic centimeters
lb/kg	pounds to kilograms
oz/gr	ounces to grams
oz/lb	ounces to pounds
lb/stn	pounds to stones
°F/°C	Fahrenheit to Celsius

Canadian/U.S. Conversions

To convert U.S. quarts or pints to Canadian equivalents multiply by 1.2.

Example: Convert 4 U.S. quarts to Canadian quarts; then, convert to liters.

Press	Display	Comments
C ↓	0.	
4 ×	4.	
1.2 =	4.8	
↗	4.8	
qt ↗ lit	4.5423984	Accurate to 4.54 ± .01*

To convert Canadian quarts or pints to U.S. equivalents, divide by 1.2.

Example: Convert 4.54 liters to Canadian quarts.

Press	Display	Comments
C ↓	0.	
4.54 ↙	4.54	
qt ↗ lit	4.7974655	
÷	4.7974655	
1.2 =	4.	Accurate to 4.00 ± .01*

*For improved accuracy in Canadian/U.S. conversions use the technique for avoiding = key depressions on page 4 . Also see example page 4 .

To convert U.S. fluid ounces to the Canadian equivalent, multiply by cubic centimeters.

Example: Convert 6 U.S. fluid ounces to Canadian fluid ounces; then convert to cubic centimeters. **16**

Press	Display
C ↓	0.
6 ×	6.
.961142	.961142
×	5.766852

voiding = depression technique for improving accuracy used here.

↗
fl oz ↗ cc 170.54715

To convert Canadian fluid ounces to the U.S. equivalent, divide by 0.961142.

Example: Convert 170.55 ccs to Canadian fluid ounces.

Press	Display
C ↓	0.
170.55 ↙	170.55
fl oz ↗ cc	5.7669483
÷	5.7669483
.961142	.961142
=	6.0