MONROE ⊞

770 | ELECTRONIC CALCULATOR

OPERATING INSTRUCTIONS

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Your Silent Partner...
The 770 ELECTRONIC CALCULATOR

This Monroe's silent efficiency is matched only by its electronic speed and operational ease. Now you can solve arithmetic problems in milliseconds . . . easily . . . silently.

The 770's memory and storage registers and its advanced electronic circuitry are designed for calculations using any combination of arithmetic operations. Every answer is instantly available for subsequent use; every answer is automatically displayed decimally correct.

Algebraic logic, too, has been designed into the Monroe 770. All negative entries and results are indicated by an amber light.

This booklet provides complete instructions for operating the Monroe 770 Electronic Calculator . . . your silent partner.

MONROE 770 ELECTRONIC CALCULATOR

2 3 9 8 4 5 8 3 9 2 3 8 0 2 9

1 DISPLAY

2 STORAGE LIGHTS

5 NEGATIVE LIGHT

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4 ON-OFF SLIDE
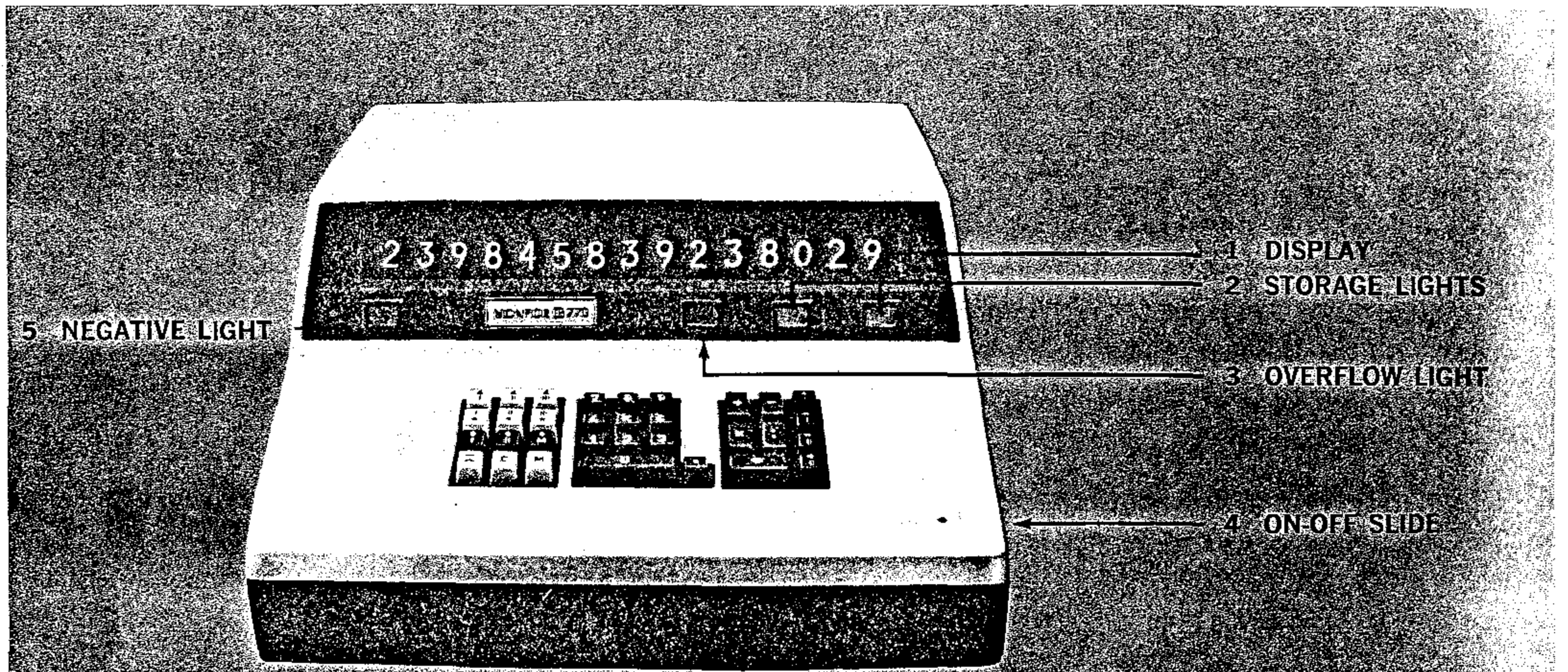
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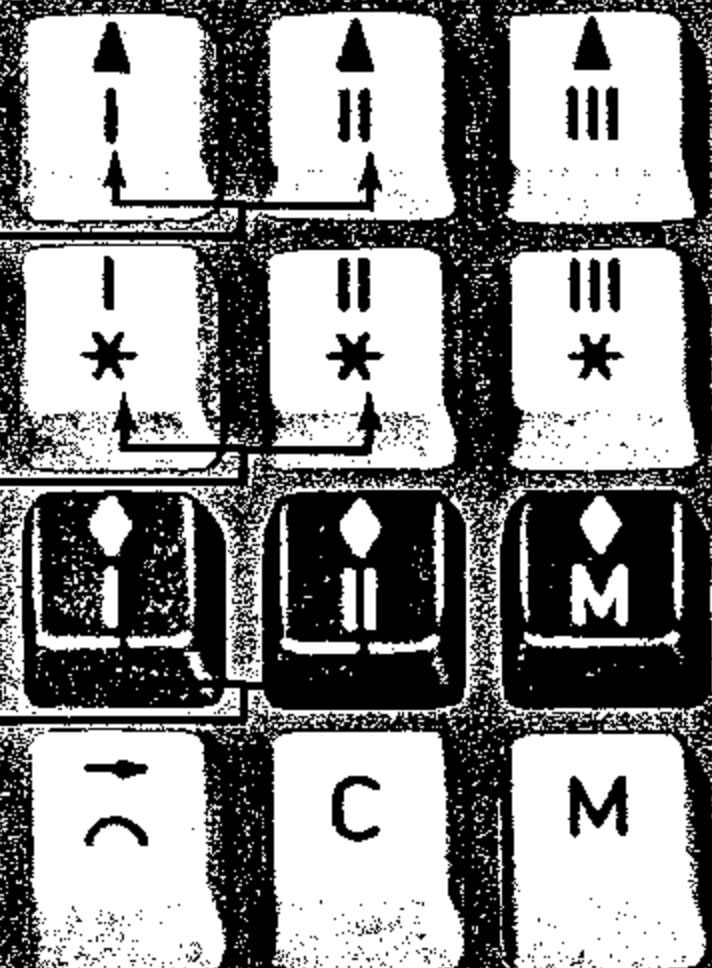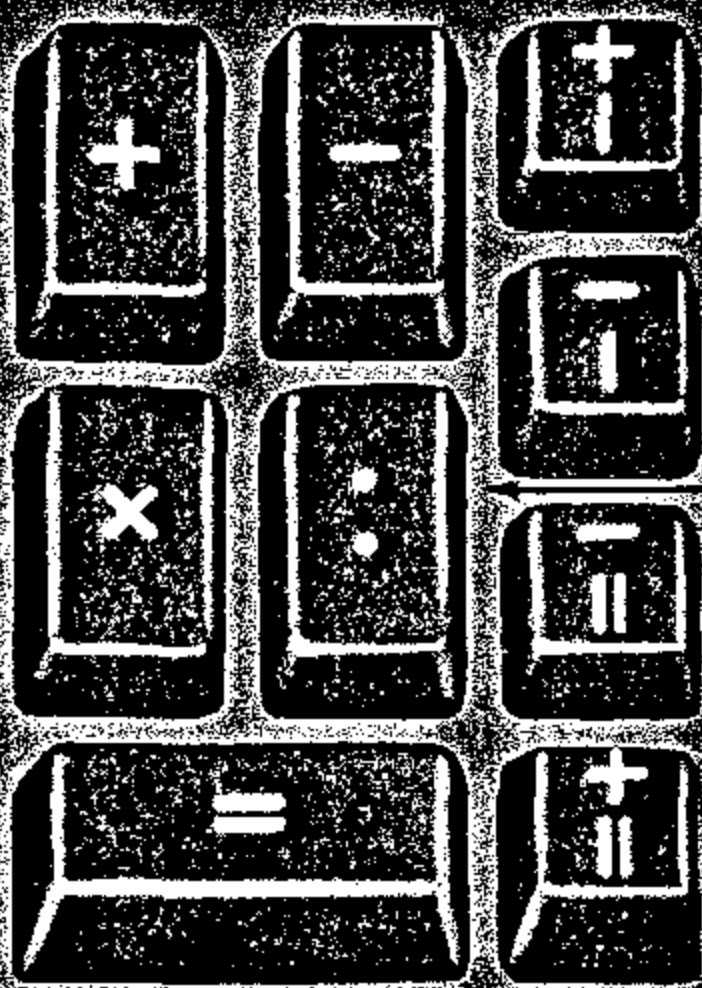
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19 STORAGE I MINUS KEY

20 ENTER DIVIDEND KEY

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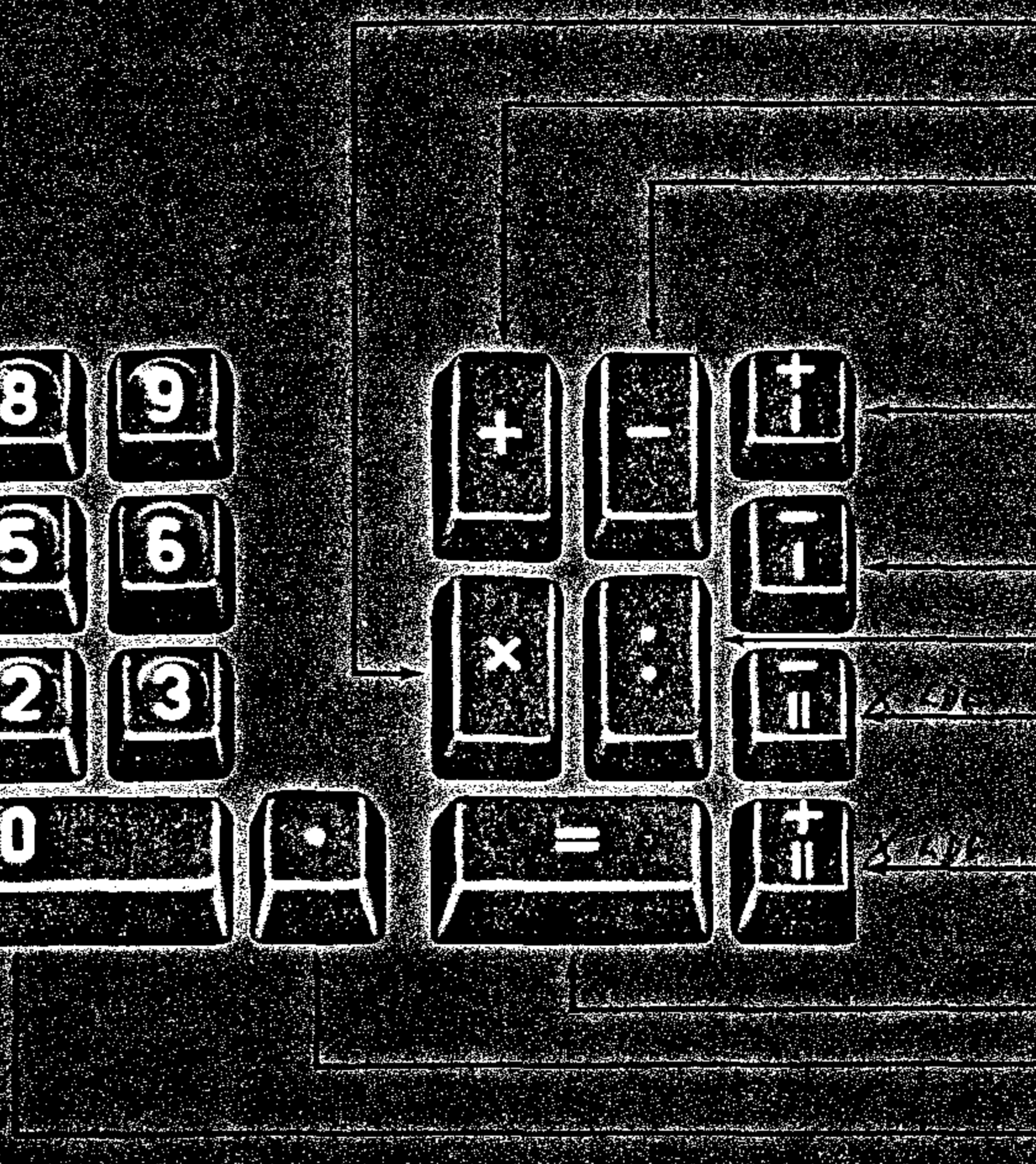
TURN ON THE CALCULATOR

To turn on the Monroe 770, move the on-off slide (4) to the left so the red dot shows. No warm-up time is required. To turn the calculator off, move the slide to the right.

Before starting to calculate you should make sure the arithmetic registers and display (1) are cleared by depressing the ⁂ and C keys.

DISPLAY

The display shows all entries and answers in large, illuminated numerals.

NUMBER ENTRY

Set a number in the 10-key keyboard (25) by depressing the keys that correspond to the digits in the number. For example: 406 is set by depressing 4, then 0, then 6. The number is shown in the display.

DECIMAL KEY

Depressing the decimal key (24) locates the decimal in the keyboard number. Touch this key before setting the decimal part of the number. When setting a whole number, the decimal key does not have to be used.

DISPLAY CLEAR KEY

If a number is set incorrectly, it can be cleared by depressing the C key (12).

4

BASIC ARITHMETIC

PLUS KEY

Prepares the arithmetic unit to add the next number in the display.

MINUS KEY

Prepares the arithmetic unit to subtract the next number in the display.

ENTER MULTIPLICAND KEY

Prepares the arithmetic unit to multiply the number in the display by the next number in the display.

ENTER DIVIDEND KEY

Prepares the arithmetic unit to divide the number in the display by the next number in the display.

EQUALS BAR

Completes the addition, subtraction, multiplication, or division, and transfers the answer to the display.

ARITHMETIC REGISTER CLEAR KEY

Clears the arithmetic registers of any accumulations or remainders of division problems.

ARITHMETIC REGISTER READ KEY

When held down this key displays the contents of the arithmetic register. When released it brings back the number formerly in the display.

The arithmetic group of keys performs the four basic rules of arithmetic: addition, subtraction, multiplication, and division. Each problem is entered in the calculator exactly as the equation would be written on paper. The calculations take place in the arithmetic register and, at the end of the problem, the answer is transferred to the display register. For example:

12 + 5 =   is keyed into the 770 just as it is written on paper

Set 12.....Depress +

Set 5.......Depress =

Read 17   Answer in display

---

12 − 5 =

Set 12.....Depress −

Set 5.......Depress =

Read 7   Answer in display

---

12 × 5 =

Set 12.....Depress ×

Set 5.......Depress =

Read 60   Answer in display

---

12 ÷ 5 =

Set 12.....Depress :

Set 5.......Depress =

Read 2.4   Answer in display

In each case the answer is displayed within a split second.

6

$12 + 5 - 8 =$

Set 12.....Depress +

Set 5.......Depress —

Set 8.......Depress =

Read 9   Answer in display

The answer in the display can be used for the next arithmetic operation without resetting. For example:

$(12 + 5) \times 3 =$

Set 12.....Depress +

Set 5.......Depress =

Read 17   Answer in display

Depress ✕

Set 3.......Depress =

Read 51   Answer in display

The result of 12 + 5 did not have to be reentered through the keyboard. Since it is in the display, a depression of the ✕ key sets up that number as a multiplicand.

OVER CAPACITY

In a case where the product of a multiplication exceeds the 15-digit capacity, the 770 provides for a correct answer of up to 30 digits. A product of 16 to 30 digits is shown in the following way:

The left-hand digits in excess of 15 are displayed. The right-hand 15 digits remain in the arithmetic register and can be displayed by depressing the ▲ key. Before beginning another problem, clear the arithmetic register by depressing the ⁂.

Example

$$111111111^2 = 12345678987654321$$

Instructions

Set 111111111.....Depress ×

Depress =
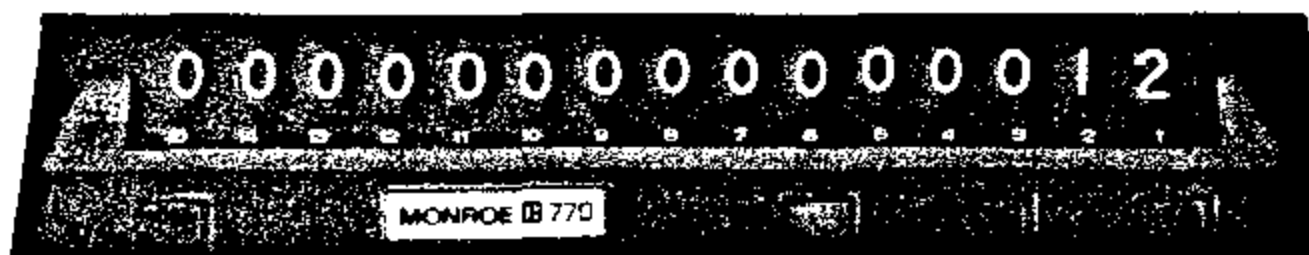
Read 12 in display

Depress and hold ▲

Read 345678987654321 in display

OVERFLOW LIGHT

The red overflow light indicates that an operation has produced an overcapacity.

STORAGE REGISTERS

The two storage registers can be used as memory registers as well as accumulators.

STORAGE PLUS KEYS

The storage plus keys add the number in the display to the selected storage register. The number remains in the display.

STORAGE MINUS KEYS

Subtract the number in the display from the selected storage register. The number remains in the display.

STORAGE RECALL KEYS

Recall the number in the selected storage register to the display. The number remains in the storage register.

STORAGE RECALL-CLEAR KEYS

Recall the number in the selected storage register to the display and clear the storage register.

STORAGE READ KEYS

When held down, the storage read keys display the contents of the selected storage register. When released, the number formerly in the display returns.

STORAGE LIGHTS

The green storage lights I and II indicate when their respective storage registers are in use.

MEMORY REGISTER

MEMORY-IN KEY

Puts the number in the display into the memory register. Only the absolute value is retained in the memory; the algebraic sign is always positive. The number with its proper sign stays in the display and can be used immediately for further calculations.

MEMORY RECALL KEY

Recalls the memory amount to the display; the number is retained in the memory register.

ROUNDOFF

SHIFT-ROUNDOFF KEY

This key allows the operator to have control over the number of digits in the answers and provides for roundoff of results. Each depression of this key shifts the number in the display one place to the right, dropping the right-hand digit. If the digit dropped was 5 or more the next digit is increased by 1. If the digit dropped was 4 or less, the next digit remains the same. See instructions for half-cent roundoff.

NEGATIVE VALUES

With the exception of the memory register, the 770 follows the rules governing algebraic sign in all cases. A negative number is entered by depressing the — key before setting the number. For example:

$$12 \times -6 = -72$$

Set 12.....Depress ×

Depress —

Set 6.......Depress =
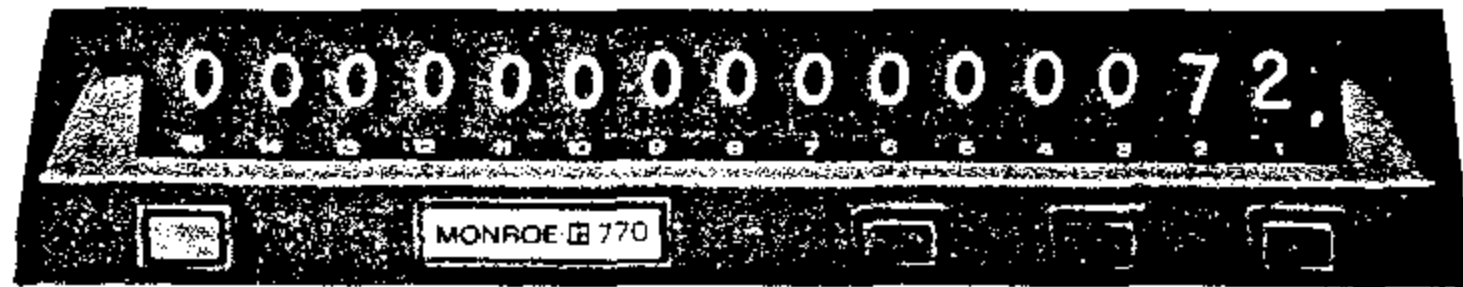
Read —72   Product in display

A negative total recalled from storage retains its negative sign and affects the calculations accordingly.

When a value is placed in the memory register, it loses its algebraic sign and retains only its absolute value.

NEGATIVE LIGHT

A negative product is identified by the amber negative light.

FUNDAMENTAL OPERATIONS

The next few pages give step-by-step instructions for addition, subtraction, multiplication, and division. Actually the arithmetic operations could almost be self-taught. All the operator has to know are the arithmetic symbols learned in elementary school.
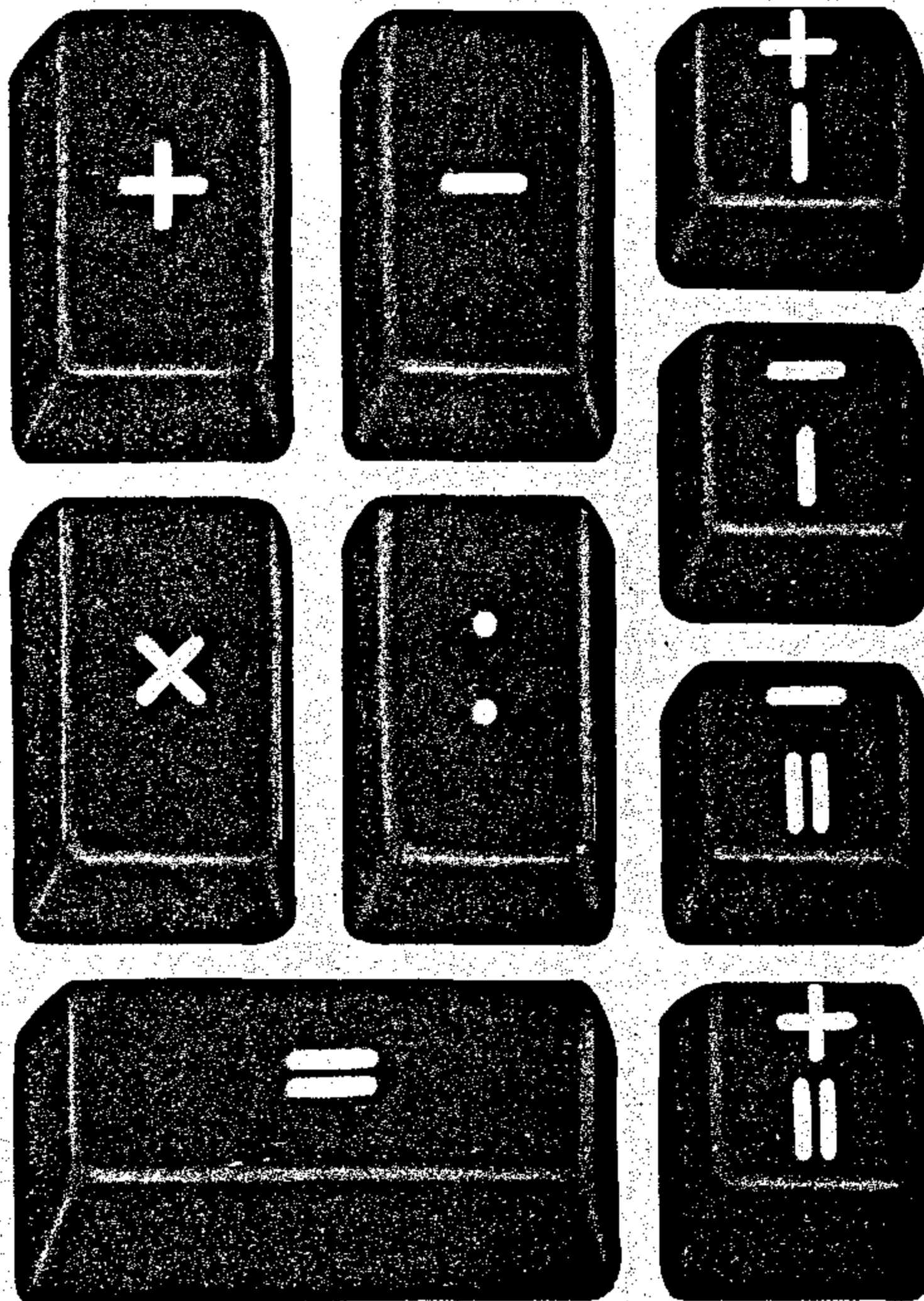
ADDITION

When adding a column of numbers it is usually best to add in a Storage Register.

Example

	130.46
	12.55
	81.81
	3,541.00
	3,765.82
	97.23
	6.00
	3,869.05

Instructions

Depress ⚏

Set 130•46.....Depress ⚏

Set 12•55.......Depress ⚏

Set 81•81.......Depress ⚏

Set 3541.........Depress ⚏

Depress ⚏

Read 3765.82   Sub-total in display

Set 97•23.......Depress ⚏

Set 6...............Depress ⚏

Depress ⚏

Read 3869.05   Total in display

The same addition problem can be done in the Arithmetic Register.

Instructions

Set 130•46.....Depress +

Set 12•55.......Depress +

Set 81•81.......Depress +

Set 3541.........Depress =

Read 3765.82   Sub-total in display

Depress +

Set 97•23.......Depress +

Set 6...............Depress =

Read 3869.05   Total in display

SUBTRACTION

Example

884.15
—90.33
―――――
793.82

When a total is negative the true negative number will be displayed and the amber minus light will come on.

Storage Register

Depress ⊻

Set 884•15.....Depress ⫟

Set 90•33.......Depress π̄

Depress ⊻

Read 793.82   Answer in display

Arithmetic Register

Set 884•15.....Depress —

Set 90•33.......Depress =

Read 793.82   Answer in display

Example

536.1
—645.0
―――――
—108.9

Instructions

Storage Register

Depress ⊻

Set 536•1.....Depress ⫟

Set 645........Depress π̄

Depress ⊻

Read —108.9   Answer in display

Arithmetic Register

Set 536•1.....Depress —

Set 645........Depress =

Read —108.9   Answer in display

MIXED ADDITION AND SUBTRACTION

787
125
−231
29
―――
710

Depress ‖⚹

Set 787.....Depress ⫪

Set 125.....Depress ⫪

Set 231.....Depress ⫪

Set 29.......Depress ⫪

Depress ‖⚹

Read 710   Total in display

Set 787.....Depress +

Set 125.....Depress −

Set 231.....Depress +

Set 29.......Depress =

Read 710   Total in display

MULTIPLICATION

$23 \times 3 = 69$

Set 23.........Depress ×

Set 3...........Depress =

Read 69   Product in display

28½ hrs. @ \$3.62 per hour = \$103.17

Set 28•5.....Depress ×

Set 3•62.....Depress =

Read 103.17   Answer in display

Multiplication with Addition of Products

Example

$$12 \times 5 = 60$$
$$440 \times 7 = 3080$$
$$11 \times 42 = \underline{462}$$
$$3602$$

Instructions

Depress ⚌

Set 12.......Depress ×

Set 5.........Depress =

Read 60   Product in display

Depress ‡

Set 440.....Depress ×

Set 7.........Depress =

Read 3080   Product in display

Depress ‡

Set 11.......Depress ×

Set 42.......Depress =

Read 462   Product in display

Depress ‡

Depress ⚌

Read 3602   Total in display

Multiplication with Subtraction of Products

Example

$$175 \times 16 = 2800$$
$$-(39 \times 21) = \underline{-819}$$
$$1981$$

Instructions

Depress ⚌

Set 175.....Depress ×

Set 16.......Depress =

Read 2800   Product in display

Depress ‡

Set 39.......Depress ×

Set 21.......Depress =

Read 819   Product in display

Depress ⊤

Depress ⚌

Read 1981   Total in display

Multiplying a Series of Numbers

$$25 \times 35 \times 45 = 39,375$$

Set 25.....Depress ×

Set 35.....Depress =

Depress ×

Set 45.....Depress =

Read 39375   Answer in display

Multiplication by the Same Number

$$124 \times 31.82 = 3,945.68$$
$$124 \times 5.60 = 694.40$$
$$124 \times 40.07 = 4,968.68$$

Set 124.........Depress ×

Set 31•82.....Depress =

Read 3945.68   Product in display

Set 5•6.........Depress =

Read 694.4   Product in display

Set 40•07.....Depress =

Read 4968.68   Product in display

SQUARING

$$12^2 = 144$$

Set 12.....Depress ×

Depress =

Read 144   Product in display

DIVISION

Example

$525 \div 7 = 75$

Instructions

Set 525.....Depress :

Set 7.........Depress =

Read 75   Quotient in display

Division Stop Procedure

As in any desk calculator a divisor of zero will cause the system to run continuously. If this illogical operation should occur, the procedure to correct it is as follows:

Depress ⇄

Depress C

Begin problem again

Division By the Same Number

Example

$4589.25 \div 436.58 = 10.51$

$1952.54 \div 436.58 = 4.47$

Instructions

Set 4589•25.....Depress :

Set 436•58.......Depress M

Depress =

Read 10.51   Quotient in display

Set 1952•54.....Depress :

Depress $\overset{\bullet}{M}$

Depress =

Read 4.47   Quotient in display

MULTI-STEP ARITHMETIC PROBLEMS

Any answer in the display can be used for further calculation by depressing the proper control key: plus, minus, times, or divide. This lets the Monroe 770 handle any arithmetic sequence without re-entry.

Example

$$\frac{(4 \times 5) + 6 - 7}{8} = 2.375$$

Instructions

Set 4.....Depress ×
Set 5.....Depress =
        Depress +
Set 6.....Depress −
Set 7.....Depress =
        Depress :
Set 8.....Depress =

Read 2.375   Answer in display

Example

$$\left(\frac{135 + 21}{12} \times 4\right) - 2 = 50$$

Instructions

Set 135.....Depress +
Set 21.......Depress =
        Depress :
Set 12.......Depress =
        Depress ×
Set 4.........Depress =
        Depress −
Set 2.........Depress =

Read 50   Answer in display

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APPLICATIONS

In the following section the fundamental operations are applied to a number of calculations. For each problem step-by-step instructions are given.

Extending or Checking Invoices
Invoice with Discount
Half-cent Roundoff
Payroll
Accumulation of Items
    and Extensions
Averaging
Discount
Chain Discount
Mark-up
Proration
Percentage Distribution
Percentage
Expense as Per cent of Sales
Group and Grand Total Addition
Two-total Addition
Insurance
Simple Interest
Bond Amortization
Fund Pricing
Cubic Volume
Linear Interpolation
Statistical Summation
Standard Deviation
Square Root
Trend Line

EXTENDING OR CHECKING INVOICES

Example

48 Cases @	$1.05 per case	$ 50.40	
54 Cases @	4.32 per case	233.28	
33 Cases @	5.22 per case	172.26	
		455.94	
	Shipping charge	15.88	
	Total	$471.82	

Instructions

Depress ⚌

Set 48..........Depress ×
Set 1•05.......Depress =
Read 50.40   Answer in display

Depress ⊤
Set 54..........Depress ×
Set 4•32.......Depress =
Read 233.28   Answer in display

Depress ⊤
Set 33..........Depress ×
Set 5•22.......Depress =
Read 172.26   Answer in display

Depress ⊤
Depress ⚌
Read 455.94   Total in display

Depress +
Set 15•88.....Depress =
Read 471.82   Total in display

INVOICE WITH DISCOUNT

Example

QUAN.	ITEM	PRICE	
6	Parts	$2.25	$13.50
5	Tubes	1.50	7.50
			21.00
	Less 12%		2.52
	Net		$18.48

Instructions

Depress ⚌

Set 6..........Depress ×
Set 2•25.....Depress =
Read 13.50   Answer in display

Depress ⊤
Set 5..........Depress ×
Set 1•50.....Depress =
Read 7.50   Answer in display

Depress ⊤
Depress ⊤
Read 21.00   Total in display

Depress ×
Set •12.......Depress =
Read 2.52   Amount of discount in display

Depress ⊤
Depress ⚌
Read 18.48   Net in display

HALF-CENT ROUNDOFF

Much of the work done on a calculator involves dollars and cents. Results which represent dollars and cents are usually rounded off to the nearest whole cent: i.e., 1.726 is rounded to $1.73; 1.723 is rounded to $1.72.

With the Monroe 770 the operator has the ability to automatically round off these results and eliminate any digits to the right of the cents column.

Example

```
 3.5 items @ $1.75 = $ 6.13
12.3 items @   .98 =  12.05
                     ───────
                      $18.18
```

Instructions

                    Depress ⚕

Set 3•5.......Depress ×
Set 1•75.....Depress =

Read 6.125   Result in display

                    Depress ⇄

Read 6.13   First extension in display

                    Depress ⁂

Set 12•3.....Depress ×
Set •98.......Depress =

Read 12.054   Result in display

                    Depress ⇄

Read 12.05   Second extension in display

                    Depress ⁂
                    Depress ⚕

Read 18.18   Total in display

PAYROLL

Example

An employee worked 44 hours at an hourly rate of $2.25. Figure the 40 hours at the regular rate and 4 hours at time and a half. Then make deductions: Withholding tax $11.61, FICA $3.23, State unemployment $.78.

```
40 × 2.25 = $ 90.00
 6 × 2.25 =   13.50
             ───────
             103.50
            − 11.61
            −  3.23
            −   .78
             ───────
             $ 87.88
```

Instructions

                    Depress ⚕

Set 2•25.......Depress M
                    Depress ×
Set 40..........Depress =

Read 90.00   Amount of regular pay in display

                    Depress ⁂
                    Depress ⁑M
                    Depress ×
Set 6............Depress =

Read 13.50   Amount of overtime pay in display

                    Depress ⁂
                    Depress ⁑

Read 103.50   Gross pay in display

Set 11•61.....Depress ⁒
Set 3•23.......Depress ⁒
Set •78........Depress ⁒
                    Depress ⚕

Read 87.88   Net pay in display

ACCUMULATION OF ITEMS AND EXTENSIONS

Example

NO. OF ITEMS		PRICE	
14 @	$1.25 =	$17.50
12 @	3.00 =	36.00
6 @	1.98 =	11.88
32		$65.38

Instructions

Depress ⌊✳

Depress ‖✳

Depress ×

Set 14.........Depress †

Set 1•25.....Depress =

Read 17.50   Answer in display

Depress ⫪

Set 12.........Depress †

Set 3...........Depress =

Read 36   Answer in display

Depress ⫪

Set 6...........Depress †

Set 1•98.....Depress =

Read 11.88   Answer in display

Depress ⫪

Depress ⌊✳

Read 32   Total items in display

Depress ‖✳

Read 65.38   Total price in display

AVERAGING

Example

311
43
132
250
97
___
833 ÷ 5 = 166.6 (average)

Instructions

Set 311.....Depress +

Set 43.......Depress +

Set 132.....Depress +

Set 250.....Depress +

Set 97.......Depress =

Depress ∶

Set 5.........Depress =

Read 166.6   Average in display

DISCOUNT

Example

Total	$61.50
Less 5%	3.08
Net	$58.42

Instructions

Before starting, depress ✕, then ⊻

   Set 61•50.....Depress ⊤

   Set •05........Depress =

            Depress ⇄ twice

Read 3.08   Amount of discount in display

            Depress ⊼

            Depress ⊻

Read 58.42   Net after discount in display

CHAIN DISCOUNT

Example

TOTAL	CHAIN DISCOUNT	NET AMOUNT
$162.70	15-10-5%	$118.24

Instructions

   Set 162•7.....Depress ✕

   Set •85.........Depress =
   (Complement of .15)

            Depress ✕

   Set •9...........Depress =
   (Complement of .10)

            Depress ✕

   Set •95.........Depress =
   (Complement of .05)

Read 118.24   Net amount in display

MARK-UP

Example

Find the selling price of an article which costs $24.95 and is to be sold at a 37.5% mark-up. The selling price is $39.92.

Instructions

Before beginning to calculate:

            Depress ⊻

For each mark-up use the following routine:

   Set 1............Depress ⊤

   Set •375......Depress ⊼

   Set 24.95.....Depress ⦂

            Depress ⊻

            Depress =

Read 39.92   Answer in display

PRORATION

DEPT.	FLOOR SPACE	RENTAL EXPENSE
A	960	$1,141.53
B	1,330	1,581.50
C	1,425	1,694.46
D	870	1,034.51
	4,585	$5,452.00

Instructions

Depress ⚏

Set 5452.....Depress ：

Set 4585.....Depress ＝

Depress M

Set 960.......Depress ×

Depress ♦M

Depress ＝

Depress ⁑

Read 1141.53   Answer in display

Set 1330.....Depress ×

Depress ♦M

Depress ＝

Depress ⁑

Read 1581.50   Answer in display

Set 1425.....Depress ×

Depress ♦M

Depress ＝

Depress ⁑

Read 1694.46   Answer in display

Set 870.......Depress ×

Depress ♦M

Depress ＝

Depress ⁑

Read 1034.51   Answer in display

Depress ⚏

Read 5451.99997895   Total in display

PERCENTAGE DISTRIBUTION

Example

DISTRICT	SALES	PERCENTAGE
Boston	$17,635	19.2
New York	20,204	22.0
Baltimore	18,919	20.6
Atlanta	25,164	27.4
Miami	9,919	10.8
	$91,841	100.0

Instructions

Depress ⚏⁎

Set 91841.....Depress M

Set 17635.....Depress :

Depress ⁑M

Depress =

Depress ⁑ⁱⁱ

Read .192   Answer in display

Set 20204.....Depress :

Depress ⁑M

Depress =

Depress ⁑ⁱⁱ

Read .220   Answer in display

Set 18919.....Depress :

Depress ⁑M

Depress =

Depress ⁑ⁱⁱ

Read .206   Answer in display

Set 25164.....Depress :

Depress ⁑M

Depress =

Depress ⁑ⁱⁱ

Read .274   Answer in display

Set 9919.......Depress :

Depress ⁑M

Depress =

Depress ⁑ⁱⁱ

Read .108   Answer in display

Depress ⚏⁎

Read .99999998   Total of answers in display

PERCENTAGE

Example

What per cent is 1945.75 of 8127.39?

Answer   .2394 or 23.9%

Set 1945•75.....Depress :

Set 8127•39.....Depress =

Read .2394   Answer in display

PERCENTAGE OF CHANGE

Example

THIS YEAR SALES	LAST YEAR SALES	DIFFERENCE	PER CENT DIFFERENCE	
$579,090	$509,912	+69,178	13.6%	Increase
96,630	109,063	−12,433	11.4%	Decrease

Instructions

Set 579090.....Depress —

Set 509912.....Depress M

Depress =

Read 69178 Difference in display

Depress :

Depress ⁂M

Depress =

Read .136   Per cent increase in display

Set 96630.......Depress —

Set 109063.....Depress M

Depress =

Read −12433   Difference in display

Depress :

Depress ⁂M

Depress =

Read −.114   Per cent decrease in display

EXPENSE AS PER CENT OF SALES

Example

DEPT.	SALES	ADVERTISING APPROPRIATION	% ADV. EXPENSE BASED ON SALES
A	$372,916	$17,900	4.8%
B	350,980	17,900	5.1
C	303,489	17,900	5.9
D	365,306	17,900	4.9

Instructions

Set 1790000†.....Depress M

Depress :

Set 372916.........Depress =

Read 4.8   Percentage in display

Depress ⁎M

Depress :

Set 350980.........Depress =

Read 5.1   Percentage in display

Depress ⁎M

Depress :

Set 303489.........Depress =

Read 5.9   Percentage in display

Depress ⁎M

Depress :

Set 365306.........Depress =

Read 4.9   Percentage in display

†Add two zeros to have the percentages read at the decimal.

GROUP AND GRAND TOTAL ADDITION

Example

12	40
13	31
15	21
17	53

57 + 145 = 202

Instructions

Depress ⌊⁎

Depress ‖⁎

Set 12.....Depress ⸸ⁱⁱ

Set 13.....Depress ⸸ⁱⁱ

Set 15.....Depress ⸸ⁱⁱ

Set 17.....Depress ⸸ⁱⁱ

Depress ‖⁎

Read 57   First group total in display

Depress ⸸

Set 40.....Depress ⸸ⁱⁱ

Set 31.....Depress ⸸ⁱⁱ

Set 21.....Depress ⸸ⁱⁱ

Set 53.....Depress ⸸ⁱⁱ

Depress ‖⁎

Read 145   Second group total in display

Depress ⸸

Depress ⌊⁎

Read 202   Grand total in display

TWO-TOTAL ADDITION

Example

$12.30	D	$15.07	C
6.57	C	2.49	D
6.22	D	1.93	C
13.40	D	4.87	C

Total D = $34.41
Total C =   28.44

Instructions

Depress ⌊⁎

Depress ‖⁎

Set 12•30.....Depress ⸸

Set 6•57.......Depress ⸸ⁱⁱ

Set 6•22.......Depress ⸸

Set 13•40.....Depress ⸸

Set 15•07.....Depress ⸸ⁱⁱ

Set 2•49.......Depress ⸸

Set 1•93.......Depress ⸸ⁱⁱ

Set 4•87.......Depress ⸸ⁱⁱ

Depress ⌊⁎

Read 34.41   Total D in display

Depress ‖⁎

Read 28.44   Total C in display

INSURANCE
Earned and Return Premium

Example

PREMIUM	DAYS IN EFFECT	EARNED	RETURN
$135.76	186	69.18	66.58

Instructions

Before beginning the calculations:

              Depress ⚡

Set 365..........Depress M

For each problem use the following routine:

Set 135•76.....Depress ⚡
              Depress ×

Set 186...........Depress =
              Depress :
              Depress ⚡M
              Depress =

Read 69.18   Amount of premium earned in display

              Depress $\overline{\pi}$
              Depress ⚡

Read 66.58   Amount of return premium in display

SIMPLE INTEREST
360 Day Year

Example

AMOUNT	RATE	DAYS	INTEREST
$865.00	6.00%	46	$6.63

Instructions

Before beginning a series of simple interest calculations:

Set 360.....Depress M

For each problem use the following routine:

Set 865.....Depress ×
Set •06.....Depress =
          Depress ×
Set 46.......Depress =
          Depress :
          Depress ⚡M
          Depress =

Read 6.63   Amount of interest in display

BOND AMORTIZATION—DISCOUNT BOND

Compute the semiannual discount amortization and the increasing balance of the book value for the following bond issue.

Example

Purchased	July 1, 1967 for $49,128.18
Due	July 1, 1972 at $50,000.00
Interest Rate	.0475
Yield Rate	.0515
Semiannual Coupon ...	$1,187.50

DATE	COUPON	AMORTI-ZATION	BOOK VALUE
July 1, 1967			49,128.18
Jan. 1, 1968	1187.50	77.55	49,205.73
July 1, 1968	1187.50	79.55	49,285.28
Jan. 1, 1969	1187.50	81.60	49,366.88
July 1, 1969	1187.50	83.70	49,450.58
Jan. 1, 1970	1187.50	85.86	49,536.44
July 1, 1970	1187.50	88.07	49,624.51
Jan. 1, 1971	1187.50	90.34	49,714.85
July 1, 1971	1187.50	92.67	49,807.52
Jan. 1, 1972	1187.50	95.06	49,902.58
July 1, 1972	1187.50	97.42	50,000.00

Instructions

Depress ⚡

Set 1•02575.......Depress M

Set 49128•18.....Depress ⊤

Depress ×

Set •02575.........Depress =

Depress —

Set 1187•5.........Depress =

To round off result   Depress ⇄ five times

Depress ×

Depress ⊤

Read 77.55   Amortization in display

Depress ⬧

Read 49205.73   Book value in display

For each remaining period, repeat the following steps:

Depress ⬧M

Depress =

To round off result   Depress ⇄ five times

Depress ⊤

Read 79.55   Amortization in display

Depress ⬧

Read 49285.28   Book value in display

FUND PRICING

Example

223 shares @ $22.59 = $5037.57 (Amount due)

Concession	.075	377.82
Asset Value	.920	4634.56
Corporate Credit	.005	25.19
		5037.57

Instructions

Enter the three constants before beginning to calculate:

Depress ⱡ

Depress ⱨ

Set •075.......Depress †

Set •92........Depress ‡

Set •005.......Depress M

For each problem use the following routine:

Set 223.........Depress ×

Set 22•59.....Depress =

Read 5037.57   Amount due in display

Depress ×

Depress †

Depress =

Read 377.82   Concession in display

Depress ‡

Depress =

Read 4634.56   Asset value in display

Depress M

Depress =

Read 25.19   Corporate credit in display

CUBIC VOLUME

Example

How many cubic yards in an excavation that measures 36′ × 22′ × 12′?

Answer   352 cubic yards

Instructions

Before starting a series of cubic volume calculations:

   Set 27.....Depress M

For each problem use the following routine:

   Set 36.....Depress ×

   Set 22.....Depress =

            Depress ×

   Set 12.....Depress =

            Depress :

            Depress $\updownarrow$ M

            Depress =

Read 352   Answer in display

LINEAR INTERPOLATION

Example

Find Sin 11° 10′ 34″

Sin 11° 10′	=	0.1936636
Sin 11° 10′ 34″	=	f(x)
Sin 11° 11′	=	0.1939490
Sin 11° 10′ 34″	=	0.1938253

Instructions

   Set •1939490.....Depress −

   Set •1936636.....Depress M

              Depress =

              Depress ×

   Set 34.................Depress =

              Depress :

   Set 60.................Depress =

              Depress +

              Depress $\updownarrow$ M

              Depress =

Read .19382532   Answer in display

STATISTICAL SUMMATIONS
Σx and Σx^2

Example

Compute Σx and Σx^2 for the following values of x. (12, 17, 9, 10, 11, 5, 14).

$\Sigma x = 78$ $\Sigma x^2 = 956$ $N = 7$

Instructions

Before beginning the calculations:

Depress ↓*

Depress ⫫*

Depress ×

For each value of x:

Set 12 (x).....Depress †

Depress =

Depress †ᵢᵢ

Repeat procedure for each value of x. After last x:

Depress ⸽

Read 78 Σx in display

Depress ⸽ᵢᵢ

Read 956 Σx^2 in display

STANDARD DEVIATION

Example

Calculate $\bar{x}$ and S^2 when $\Sigma x = 78$ is in storage I and $\Sigma x^2 = 956$ is in storage II. $N = 7$

Formula

$$\bar{x} = \frac{\Sigma x}{N} = 11.14285714$$

$$S^2 = \frac{\Sigma x^2 - \frac{(\Sigma x)^2}{N}}{N-1} = 14.47619051$$

Instructions

Depress ⸽

Depress ⦂

Set 7.....Depress =

Read 11.14285714   Value of $\bar{x}$ in display

Depress ×

Depress ↓*

Depress =

Depress π̄

Depress ⫫*

Depress ⦂

Set 6.....Depress =

Read 14.47619051   Value of S^2 in display

To find value of S see procedure for square root.

SQUARE ROOT

The method used to determine the square root of a number is to generate a series of approximations each of which draws nearer to the square root. When the approximations equal the square root of the radicand they will repeat. The first approximation to be used is the operator's estimate of what the square root should be. Each subsequent approximation (X_{n+1}) is the average of the last approximation (X_n) and the radicand (A) divided by the last approximation (X_n). The formula is:
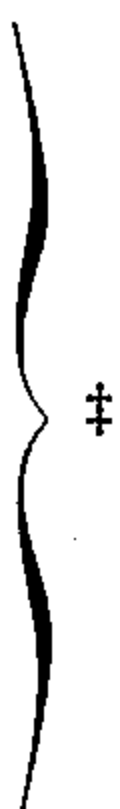
$$X_{n+1} = \frac{X_n + \dfrac{A}{X_n}}{2}$$

A = number to be rooted
X = approximation
X_0 = operator's estimate of root

Example

$$\sqrt{14.47619051} = 3.80475892$$

Instructions

Set 14•47619051.....Depress M
Depress ⁑

Set 3•5 (A_0)..............Depress ⊤

Depress ⁑ M ⎫
Depress :   ⎪
Depress ⊤   ⎪
‡‡Depress =   ⎬ ‡
Depress ⊤   ⎪
Depress ⁑   ⎪
Depress :   ⎪
Depress 2   ⎪
Depress =   ⎪
Depress ⊤   ⎭

‡Repeat these steps until approximations do not change.

‡‡After this step the approximation may be checked for correctness by depressing the ⊤ key. Starting from the left, the digits which do not change are correct.

TREND LINE
(y = mx + b)

Example

m	=	−3	b	=	16
x_1	=	2	y_1	=	10
x_2	=	−4	y_2	=	28
x_3	=	8	y_3	=	−8

Instructions

Depress ⁎
Depress ⁑
Set 3..............Depress ⊤
Set 16............Depress ⊤

For each value of x:

Set 2 (x_1)‡.....Depress x
Depress ↑
Depress =
Depress +
Depress ⁑
Depress =

Read 10   Value of y_1 in display

‡For negative values of x just depress — before setting the number.

CONCLUDING NOTE

Your new calculator was built to provide years of dependable service. To assure you of receiving the maximum benefit from Monroe equipment we offer:

Personal Instruction

Monroe is always ready to instruct users in the operation of its machines. This personal service assures you of getting the best possible use from your calculator.

Scheduled Preventive Maintenance

Like any precision instrument your Monroe should be given periodic inspections. During the warranty period this service is provided free of charge by Monroe. Upon expiration of the warranty, the maintenance of your Monroe by factory-trained technicians can be continued for a nominal yearly charge.

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