Operating Instructions

Electronic Calculator

Monroe International

General Offices: Orange, New Jersey

Monroe
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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.
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 $\ast$ 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).
### BASIC ARITHMETIC

<table>
<thead>
<tr>
<th><strong>Key</strong></th>
<th><strong>Description</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PLUS KEY</strong></td>
<td>Prepares the arithmetic unit to add the next number in the display.</td>
</tr>
<tr>
<td><strong>MINUS KEY</strong></td>
<td>Prepares the arithmetic unit to subtract the next number in the display.</td>
</tr>
<tr>
<td><strong>ENTER MULTIPLICAND KEY</strong></td>
<td>Prepares the arithmetic unit to multiply the number in the display by the next number in the display.</td>
</tr>
<tr>
<td><strong>ENTER DIVIDEND KEY</strong></td>
<td>Prepares the arithmetic unit to divide the number in the display by the next number in the display.</td>
</tr>
<tr>
<td><strong>EQUALS BAR</strong></td>
<td>Completes the addition, subtraction, multiplication, or division, and transfers the answer to the display.</td>
</tr>
<tr>
<td><strong>ARITHMETIC REGISTER CLEAR KEY</strong></td>
<td>Clears the arithmetic registers of any accumulations or remainders of division problems.</td>
</tr>
<tr>
<td><strong>ARITHMETIC REGISTER READ KEY</strong></td>
<td>When held down this key displays the contents of the arithmetic register. When released it brings back the number formerly in the display.</td>
</tr>
</tbody>
</table>
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 \times 5 =

Set 12.....Depress \times
Set 5......Depress =

Read 60 Answer in display

12 \div 5 =

Set 12.....Depress :
Set 5......Depress =

Read 2.4 Answer in display

In each case the answer is displayed within a split second.
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) × 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 \[\div\] key. Before beginning another problem, clear the arithmetic register by depressing the \[\times\].

Example

\[111111111 \times 111111111 = 12345678987654321\]

Instructions

Set 111111111....Depress \[\times\]

Depress =

Read 12 in display

Depress and hold \[\div\]

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.

<table>
<thead>
<tr>
<th>STORAGE PLUS KEYS</th>
</tr>
</thead>
<tbody>
<tr>
<td>The storage plus keys add the number in the display to the selected storage register. The number remains in the display.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>STORAGE MINUS KEYS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subtract the number in the display from the selected storage register. The number remains in the display.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>STORAGE RECALL KEYS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recall the number in the selected storage register to the display. The number remains in the storage register.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>STORAGE RECALL-CLEAR KEYS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recall the number in the selected storage register to the display and clear the storage register.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>STORAGE READ KEYS</th>
</tr>
</thead>
<tbody>
<tr>
<td>When held down, the storage read keys display the contents of the selected storage register. When released, the number formerly in the display returns.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>STORAGE LIGHTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>The green storage lights I and II indicate when their respective storage registers are in use.</td>
</tr>
</tbody>
</table>
OPERATING CONTROLS AND THEIR 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.

ROUND OFF

SHIFT-ROUND OFF 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 \( \times \)
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.
When adding a column of numbers it is usually best to add in a Storage Register.

Example

<table>
<thead>
<tr>
<th>130.46</th>
<th>12.55</th>
<th>81.81</th>
<th>3,541.00</th>
</tr>
</thead>
<tbody>
<tr>
<td>3,765.82</td>
<td>97.23</td>
<td>6.00</td>
<td>3,869.05</td>
</tr>
</tbody>
</table>

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

Instructions

Set 130.46......Depress +
Set 12.55......Depress +
Set 81.51......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

Instructions

Storage Register

Example

884.15
-90.33
793.82

Depress ↓

Set 884.15.....Depress ↓
Set 90.33......Depress ↓
Depress ↓

Read 793.82  Answer in display

Arithmetic Register

Set 884.15.....Depress −
Set 90.33......Depress =

Read 793.82  Answer in display

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

Instructions

Storage Register

Example

536.1
-645.0
-108.9

Depress ↓

Set 536.1.....Depress ↑
Set 645.........Depress ↓
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

\[
\begin{array}{cccc}
787 & & & \\
125 & & & \\
-231 & & & \\
29 & & & \\
\hline
710 & & & \\
\end{array}
\]

Depress \(7\)
Set 787......Depress \(+\)
Set 125......Depress \(+\)
Set 231......Depress \(\mp\)
Set 29......Depress \(+\)

Depress \(7\)
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 \(\times\)
Set 3..........Depress \(=\)

Read 69 Product in display

Set 28\(\frac{1}{2}\).....Depress \(\times\)
Set 3\(\cdot62\).....Depress \(=\)

Read 103.17 Answer in display

28\(\frac{1}{2}\) hrs. @ $3.62 per hour = $103.17
**Multiplication with Addition of Products**

**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

**Example**

\[ 12 \times 5 = 60 \]
\[ 440 \times 7 = 3080 \]
\[ 11 \times 42 = \frac{462}{3602} \]

**Multiplication with Subtraction of Products**

**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

**Example**

\[ 175 \times 16 = 2800 \]
\[ -(39 \times 21) = -819 \]
\[ \frac{1981}{1981} \]
Multiplying a Series of Numbers

\[ 25 \times 35 \times 45 = 39,375 \]

Set 25.....Depress \( \times \)
Set 35.....Depress =
Depress \( \times \)
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 \( \times \)
Set 31\cdot82.....Depress =
Read 3945.68 Product in display

Set 5\cdot6........Depress =
Read 694.4 Product in display

Set 40\cdot07.....Depress =
Read 4968.68 Product in display

SQUARING

\[ 12^2 = 144 \]

Set 12.....Depress \( \times \)
Depress =
Read 144 Product in display
DIVISION

Example
525 ÷ 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 ÷ 436.58 = 10.51
1952.54 ÷ 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 ÷
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 \times
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 \times
Set 4.....Depress =
        Depress -
Set 2.....Depress =

Read 50 Answer in display
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 or Itemizing and Extensions
- Averaging
- Discount
- Chain Discount
- Markup
- Proration
- Percentage Distribution
- Percentage
- Expenses as Percent 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

<table>
<thead>
<tr>
<th>QUAN.</th>
<th>ITEM</th>
<th>PRICE</th>
</tr>
</thead>
<tbody>
<tr>
<td>48</td>
<td>Cases</td>
<td>$1.05 per case</td>
</tr>
<tr>
<td>54</td>
<td>Cases</td>
<td>4.32 per case</td>
</tr>
<tr>
<td>33</td>
<td>Cases</td>
<td>5.22 per case</td>
</tr>
</tbody>
</table>

Shipping charge 15.88

Total $471.82

INVOICE WITH DISCOUNT

Example

<table>
<thead>
<tr>
<th>QUAN.</th>
<th>ITEM</th>
<th>PRICE</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>Parts</td>
<td>$2.25</td>
</tr>
<tr>
<td>5</td>
<td>Tubes</td>
<td>1.50</td>
</tr>
</tbody>
</table>

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

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 x 2.25 = $ 90.00
6 x 2.25 = 13.50
103.50
- 11.61
- 3.23
- .78
$ 87.88
ACCUMULATION OF ITEMS AND EXTENSIONS

Example

<table>
<thead>
<tr>
<th>NO. OF ITEMS</th>
<th>PRICE</th>
</tr>
</thead>
<tbody>
<tr>
<td>14 @ $1.25</td>
<td>$17.50</td>
</tr>
<tr>
<td>12 @ 3.00</td>
<td>36.00</td>
</tr>
<tr>
<td>6 @ 1.98</td>
<td>11.88</td>
</tr>
<tr>
<td>32</td>
<td>$65.38</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Total</th>
<th>Less 5%</th>
<th>Net</th>
</tr>
</thead>
<tbody>
<tr>
<td>$61.50</td>
<td>3.08</td>
<td>$58.42</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>TOTAL</th>
<th>CHAIN DISCOUNT</th>
<th>NET AMOUNT</th>
</tr>
</thead>
<tbody>
<tr>
<td>$162.70</td>
<td>15-10-5%</td>
<td>$118.24</td>
</tr>
</tbody>
</table>

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

### Example

<table>
<thead>
<tr>
<th>DEPT.</th>
<th>FLOOR SPACE</th>
<th>RENTAL EXPENSE</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>960</td>
<td>$1,141.53</td>
</tr>
<tr>
<td>B</td>
<td>1,330</td>
<td>1,581.50</td>
</tr>
<tr>
<td>C</td>
<td>1,425</td>
<td>1,694.46</td>
</tr>
<tr>
<td>D</td>
<td>870</td>
<td>1,034.51</td>
</tr>
<tr>
<td></td>
<td>4,585</td>
<td>$5,452.00</td>
</tr>
</tbody>
</table>

### Instructions

- Depress $\ ^{\dagger} $
- Set 5452....Depress : 
- Set 4585.....Depress =
  - Depress M
- Set 960......Depress $\times$
  - Depress $\wedge$
  - Depress =
  - Depress $\dagger$

Read 1141.53  Answer in display
- Set 1330.....Depress $\times$
  - Depress $\wedge$
  - Depress =
  - Depress $\dagger$

Read 1581.50  Answer in display
- Set 1425.....Depress $\times$
  - Depress $\wedge$
  - Depress =
  - Depress $\dagger$

Read 1694.46  Answer in display
- Set 870......Depress $\times$
  - Depress $\wedge$
  - Depress =
  - Depress $\dagger$

Read 1034.51  Answer in display
- Depress $\wedge$

Read 5451.99997895  Total in display
### PERCENTAGE DISTRIBUTION

**Example**

<table>
<thead>
<tr>
<th>DISTRICT</th>
<th>SALES</th>
<th>PERCENTAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boston</td>
<td>$17,635</td>
<td>19.2</td>
</tr>
<tr>
<td>New York</td>
<td>20,204</td>
<td>22.0</td>
</tr>
<tr>
<td>Baltimore</td>
<td>18,919</td>
<td>20.6</td>
</tr>
<tr>
<td>Atlanta</td>
<td>25,164</td>
<td>27.4</td>
</tr>
<tr>
<td>Miami</td>
<td>9,919</td>
<td>10.8</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$91,841</strong></td>
<td><strong>100.0</strong></td>
</tr>
</tbody>
</table>

**Instructions**

Depress $\%$

Set 91841.....Depress M

Set 17635.....Depress :

Depress $\downarrow$

Depress $=$

Depress $\uparrow$

Read .192 Answer in display

Set 20204.....Depress :

Depress $\downarrow$

Depress $=$

Depress $\uparrow$

Read .220 Answer in display

Set 18919.....Depress :

Depress $\downarrow$

Depress $=$

Depress $\uparrow$

Read .206 Answer in display

Set 25164.....Depress :

Depress $\downarrow$

Depress $=$

Depress $\uparrow$

Read .274 Answer in display

Set 9919......Depress :

Depress $\downarrow$

Depress $=$

Depress $\uparrow$

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**

<table>
<thead>
<tr>
<th>THIS YEAR SALES</th>
<th>LAST YEAR SALES</th>
<th>DIFFERENCE</th>
<th>PER CENT DIFFERENCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>$579,090</td>
<td>$509,912</td>
<td>+69,178</td>
<td>13.6% Increase</td>
</tr>
<tr>
<td>96,630</td>
<td>109,063</td>
<td>−12,433</td>
<td>11.4% Decrease</td>
</tr>
</tbody>
</table>

- Set 579090.....Depress —
- Set 509912.....Depress M
  Depress =
- Read 69178 Difference in display
- Depress :
- Depress
- Depress =
- Read .136 Per cent increase in display

- Set 96630......Depress —
- Set 109063.....Depress M
  Depress =
- Read −12433 Difference in display
- Depress :
- Depress
- Depress =
- Read −.114 Per cent decrease in display
### EXPENSE AS PER CENT OF SALES

**Example**

<table>
<thead>
<tr>
<th>DEPT.</th>
<th>SALES</th>
<th>ADVERTISING APPROPRIATION</th>
<th>% ADV. EXPENSE BASED ON SALES</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>$372,916</td>
<td>$17,900</td>
<td>4.8%</td>
</tr>
<tr>
<td>B</td>
<td>350,980</td>
<td>17,900</td>
<td>5.1</td>
</tr>
<tr>
<td>C</td>
<td>303,489</td>
<td>17,900</td>
<td>5.9</td>
</tr>
<tr>
<td>D</td>
<td>365,306</td>
<td>17,900</td>
<td>4.9</td>
</tr>
</tbody>
</table>

**Instructions**

Set 1790000†......Depress M
Depress : 
Set 372916.......Depress =
Read 4.8 Percentage in display
Depress ¼
Depress : 
Set 350980.......Depress =
Read 5.1 Percentage in display
Depress ¼
Depress : 
Set 303489.......Depress =
Read 5.9 Percentage in display
Depress ¼
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

<table>
<thead>
<tr>
<th>12</th>
<th>40</th>
</tr>
</thead>
<tbody>
<tr>
<td>13</td>
<td>31</td>
</tr>
<tr>
<td>15</td>
<td>21</td>
</tr>
<tr>
<td>17</td>
<td>53</td>
</tr>
</tbody>
</table>
\[ 57 + 145 = 202 \]

Instructions
- Depress ↓
- Depress ↑
- Set 12....Depress ↑
- Set 13....Depress ↑
- Set 15....Depress ↑
- Set 17....Depress ↑
- Depress ↓

Read 57 First group total in display
- Depress ↑
- Set 40....Depress ↑
- Set 31....Depress ↑
- Set 21....Depress ↑
- Set 53....Depress ↑
- 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 ↑
- Set 6•22......Depress ↑
- Set 13•40.....Depress ↑
- Set 15•07.....Depress ↑
- Set 2•49......Depress ↑
- Set 1•93......Depress ↑
- Set 4•87......Depress ↑
- Depress ↓

Read 34.41 Total D in display
- Depress ↑

Read 28.44 Total C in display
INSURANCE
Earned and Return Premium

Example

<table>
<thead>
<tr>
<th>PREMIUM</th>
<th>DAYS IN EFFECT</th>
<th>EARNED</th>
<th>RETURN</th>
</tr>
</thead>
<tbody>
<tr>
<td>$135.76</td>
<td>186</td>
<td>69.18</td>
<td>66.58</td>
</tr>
</tbody>
</table>

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 ↓
  - Depress =

Read 69.18 Amount of premium earned in display

- Depress π
- Depress π

Read 66.58 Amount of return premium in display

SIMPLE INTEREST
360 Day Year

Example

<table>
<thead>
<tr>
<th>AMOUNT</th>
<th>RATE</th>
<th>DAYS</th>
<th>INTEREST</th>
</tr>
</thead>
<tbody>
<tr>
<td>$865.00</td>
<td>6.00%</td>
<td>46</td>
<td>$6.63</td>
</tr>
</tbody>
</table>

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 ↓
  - 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

<table>
<thead>
<tr>
<th>DATE</th>
<th>COUPON</th>
<th>AMORTIZATION</th>
<th>BOOK VALUE</th>
</tr>
</thead>
<tbody>
<tr>
<td>July 1, 1967</td>
<td>1187.50</td>
<td>77.55</td>
<td>49,128.18</td>
</tr>
<tr>
<td>Jan. 1, 1968</td>
<td>1187.50</td>
<td>79.55</td>
<td>49,205.73</td>
</tr>
<tr>
<td>July 1, 1968</td>
<td>1187.50</td>
<td>81.60</td>
<td>49,285.28</td>
</tr>
<tr>
<td>Jan. 1, 1969</td>
<td>1187.50</td>
<td>83.70</td>
<td>49,366.88</td>
</tr>
<tr>
<td>July 1, 1969</td>
<td>1187.50</td>
<td>85.86</td>
<td>49,450.58</td>
</tr>
<tr>
<td>Jan. 1, 1970</td>
<td>1187.50</td>
<td>88.07</td>
<td>49,536.44</td>
</tr>
<tr>
<td>July 1, 1970</td>
<td>1187.50</td>
<td>90.34</td>
<td>49,714.85</td>
</tr>
<tr>
<td>Jan. 1, 1971</td>
<td>1187.50</td>
<td>92.67</td>
<td>49,807.52</td>
</tr>
<tr>
<td>July 1, 1971</td>
<td>1187.50</td>
<td>95.06</td>
<td>49,902.58</td>
</tr>
<tr>
<td>Jan. 1, 1972</td>
<td>1187.50</td>
<td>97.42</td>
<td>50,000.00</td>
</tr>
</tbody>
</table>

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 ↓
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 ↓
Depress ↑
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 ↓
Depress =

Read 25.19 Corporate credit in display
**CUBIC VOLUME**

**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 ↓
- Depress =

Read 352 Answer in display

**Example**

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

Answer 352 cubic yards

---

**LINEAR INTERPOLATION**

**Instructions**

Set •1939490.....Depress −
- Set •1936636.....Depress M
- Depress =
- Depress ×
- Set 34...............Depress =
- Depress :
- Set 60...............Depress =
- Depress +
- Depress ↓
- Depress =

Read .19382532 Answer in display
STATISTICAL SUMMATIONS

\[ \sum x \text{ and } \sum x^2 \]

Example

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

\[ \sum x = 78 \quad \sum x^2 = 956 \quad N = 7 \]

Notes

Instructions

Before beginning the calculations:

- Depress \( \downarrow \)
- Depress \( \downarrow \)
- Depress \( \times \)

For each value of \( x \):

- Set 12 (x).....Depress \( \uparrow \)
- Depress =
- Depress \( \downarrow \)

Repeat procedure for each value of \( x \).

After last \( x \):

- Depress \( \downarrow \)

Read 78 \( \sum x \) in display
- Depress \( \downarrow \)

Read 956 \( \sum x^2 \) in display

STANDARD DEVIATION

Example

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

Formula

\[
\bar{x} = \frac{\sum x}{N} = 11.14285714
\]

\[
S^2 = \frac{\sum x^2 - (\sum x)^2}{N} = 14.47619051
\]

Notes

Instructions

- Depress \( \uparrow \)
- Depress :

Set 7.....Depress =

Read 11.14285714 Value of \( \bar{x} \) in display
- Depress \( \times \)
- Depress \( \downarrow \)
- Depress =
- Depress \( \pi \)
- 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:

\[
X_{n+1} = \frac{X_n + \frac{A}{X_n}}{2}
\]

- \(A\) = number to be rooted
- \(X\) = approximation
- \(X_0\) = operator's estimate of root

**Example**

\[\sqrt{14.47619051} = 3.80475892\]

**Instructions**

1. Set 14.47619051... Depress M
2. Depress \(x\)
3. Set 3 \(\times\) (\(A_0\)).........Depress \(\div\)
4. Depress \(x\)
5. Depress \(x\)
6. Depress \(=\)
7. Depress \(\div\)
8. Depress \(\div\)
9. Depress =
10. Depress \(\div\)

**Repeat these steps until approximations do not change.**

**TREND LINE**

\((y = mx + b)\)

**Example**

\[
\begin{align*}
m &= -3 & b &= 16 \\
x_1 &= 2 & y_1 &= 10 \\
x_2 &= -4 & y_2 &= 28 \\
x_3 &= 8 & y_3 &= -8
\end{align*}
\]

**Instructions**

1. Depress \(\div\)
2. Depress \(\div\)
3. Set 3.............Depress \(\times\)
4. Set 16.............Depress \(\div\)
5. For each value of \(x\):
6. Set 2 \((x_1)\)........Depress \(x\)
7. Depress \(=\)
8. Depress \(\div\)
9. Depress \(\div\)
10. 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.