

Mathematics for the Space Age



Handwritten mathematical formulas on a chalkboard:

$$m\ddot{x} = -\frac{D\dot{x}}{v} \quad m\ddot{y} = -mg - \frac{D\dot{y}}{v^2}$$
$$F = \frac{P}{(1+r, \frac{t}{T})(1-r\frac{t}{T})}$$
$$P_{x:n} = R \frac{N_{x+1} - N_{x+n+1}}{D_x}$$
$$x^6 - 3x^3 + 5x^2 + 7x - 6 = 0$$

A vintage calculator is shown on the left side of the chalkboard.

$$X = \begin{array}{ccc|c} 2 & 2 & 3 & \\ 4 & -4 & 3 & \\ 16 & 6 & 2 & \\ \hline 2 & 2 & 3 & \\ 2 & -4 & 3 & \\ 3 & 6 & -2 & \end{array}$$


The
totally new
Friden*
130 Electronic
Calculator



An exclusive feature of the Friden 130

Automatic Transfer of Intermediate Answers

Automatic storage of intermediate answers for continuing calculation is a tremendous advantage, because it saves the time for manually re-entering or transfer of figures required on any other calculating machine. More important still is that it prevents the many chances for error in manually performing these operations. As each new factor is entered on the 130, the previous figure automatically moves to the next register, where it is ready for instant use. Four visible registers are provided, including the Working register, and a fifth register is available for storage of constant factors.

problem / commercial

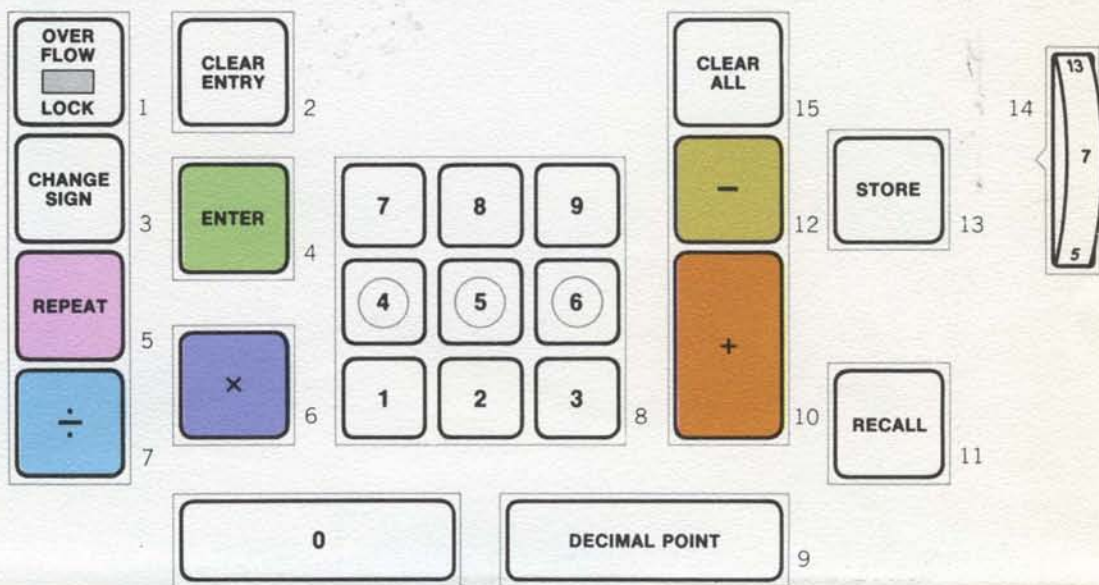
23 ft. @ 2.25	\$ 51.75
7 ft. @ 14.35	<u>100.45</u>
	152.20
Less 7%	<u>10.65</u>
Net	\$141.55

Clearing unnecessary

1. Index 23; touch **ENTER**
2. Index 2.25; touch **X**
3. Index 7; touch **ENTER**
4. Index 14.35; touch **X** **+** **REPEAT**
5. Index .07; touch **X**; touch **-**

Read all answers in register #1

the keyboard:



This is the simple "11-key" keyboard of the Friden Electronic Calculator. Everything is grouped in a convenient pattern within the span of the human hand. All controls are clearly marked and easy to use. The Decimal Point key allows you to enter amounts just as you would write them. The Store key lets you retain constant factors or results in a memory unit, while the Recall key lets you bring them back at any time for further calculation.

1. OVER-FLOW LOCK - A red light indicates an entry or answer which is beyond register capacity.
2. CLEAR ENTRY - Clears Working register No. 1.
3. CHANGE SIGN
4. ENTER - Decimally aligns entry in Working register No. 1.
5. REPEAT - Duplicates contents of register No. 1 in register No. 2.
6. X - Multiplication Key
7. ÷ - Division Key
8. KEYBOARD
9. DECIMAL POINT Key
10. + - Plus Key
11. RECALL - Recalls number from memory unit.
12. - - Minus Key
13. STORE - Enters numbers in memory unit.
14. DECIMAL POINT SELECTOR - Used for decimal program.
15. CLEAR ALL - Clears all registers, including memory.

problem / financial

\$9,876.54 @ 5³/₄% for 27 days = \$42.59
2,347.68 @ 4³/₄% for 38 days = 10.84
\$53.43

Clearing unnecessary

1. Index 9876.54; touch **ENTER**
 2. Index .0575; touch **X**
 3. Index 27; touch **X**
 4. Index 360; touch **+**
 5. Index 2347.68; touch **ENTER**
 6. Index .04375; touch **X**
 7. Index 38; touch **X**
 8. Index 360; touch **+**; touch **+**
- Read answer (53.43) in register No. 1

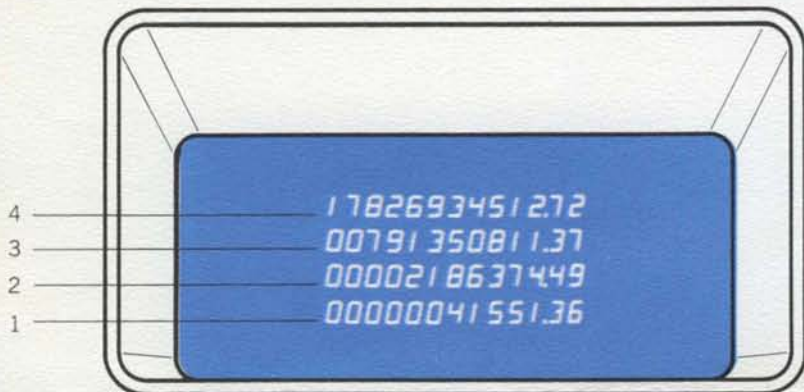
problem / scientific

$$\frac{(1.5)^2 - (3.3 \times 12.8)}{(4.2 \times 1.78)} = 5.34911-$$

Clearing unnecessary

1. Index 1.5; touch **REPEAT**; touch **X**
 2. Index 3.3; touch **ENTER**
 3. Index 12.8; touch **X**; touch **-**
 4. Index 4.2; touch **ENTER**
 5. Index 1.78; touch **X**; touch **+**
- Read answer (5.34911-) in register No. 1

the register display:



1. WORKING REGISTER No. 1 All entries and answers appear in this register.
2. REGISTER No. 2 One number of an arithmetic operation appears in this register, the other appears in the Working register.
- 3, 4. REGISTERS No. 3 and No. 4 These registers are used for storage of intermediate answers.

This is the cathode ray tube which displays the contents of the Friden Electronic Calculator's four registers. Keyboard entries and answers appear in the Working register. Results of operations move upward into the Second, Third, and Fourth registers as subsequent entries are made, where they are available for further calculation. This "stacking" principle makes it possible to work on multi-step problems in logical order, without necessity of manually re-entering amounts. All entries and answers are automatically aligned around a selected decimal point.

It has no moving parts.

Just an "eleven-key" keyboard.

***A cathode ray tube—like a miniature TV screen—
displays the contents of its four registers.***

***It's so silent, a whole battery of them working
in a library wouldn't raise an eyebrow.***

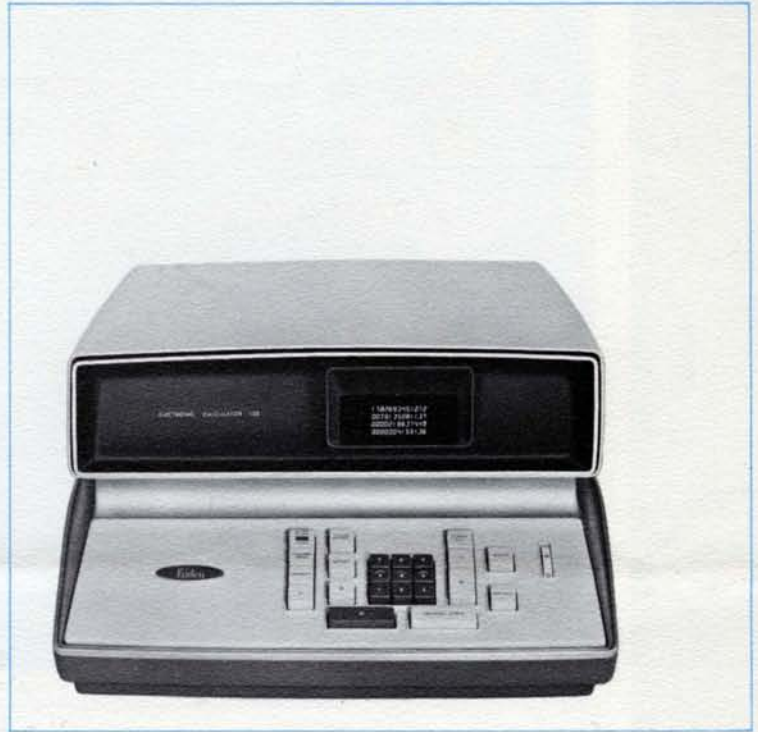
***It's so flexible that it revolutionizes calculations in
any type of business, commercial, financial,
engineering or scientific enterprises.***

Operating time is in milliseconds.

Anyone can learn to use it in a few minutes.

***It is probably the most advanced desk-top
calculating machine in existence.***

The new Friden 130 Electronic Calculator is a notable achievement in the world of figurework, midway between the electronic computer and the mechanical desk calculator. ■ In its stunning exterior beauty, the 130 represents the highest attainment of contemporary industrial design. It has functional integrity, classic simplicity, and an elegance that is unusual in modern office machines. ■ Such styling is a fitting complement to the highly efficient *interior* performance. The 130 has no moving parts. All computations are performed by solid-state electronic components. Entries and answers are displayed on a cathode ray tube, very much like a small television tube. ■ The machine is so silent you could operate a whole battery of them in a library reading room without making enough noise to cause a raised eyebrow. The *only* sounds are small keyboard clicks, audible only to the operator, which help to establish a keyboard rhythm. ■ The 130 is also very fast. Operating speeds are measured in milliseconds. For the majority of problems, the 130 provides *instantaneous mathematics*—it gives you the answer almost before you can remove your finger from a control key. ■ Advanced electronic features, such as automatic decimal point continuity in all registers, automatic true credit balance, and automatic algebraic computations, together with its simple "11-key" keyboard and clearly marked controls, make the 130 unusually easy to operate. ■ Because of its mathematical capability, electronic speed, and ease of operation, the 130 is eminently suitable for a wide range of business, engineering, and scientific calculations.



specifications:

Major components of the Friden 130 Electronic Calculator are an "11-key" keyboard, 4 solid-state plug-in assemblies, an ultrasonic delay line, and a cathode ray display tube. The machine measures 18 inches by 21 inches by 10 inches (slightly larger than an electric typewriter) and weighs 44 lbs. It operates on 115 volt, 50-60 cycle AC, and it may be plugged into any standard 3-wire grounded wall outlet.

The Friden*
130 Electronic Calculator
is probably the
most technologically advanced
desktop calculating machine
in existence.
Find out how
such a machine
can fit into
your operation.
Get complete information
from your local
Friden office,
or write to Friden, Inc.,
San Leandro,
California.

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