



## HOW TO USE A SLIDE RULE

There are many scales on a real slide rule used for different mathematical functions. But to do multiplication and division, we need only the C and D scales.

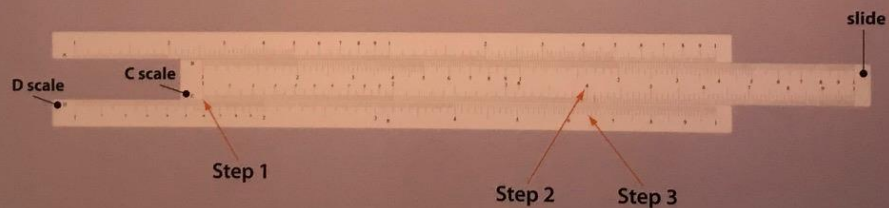
**Example:  $1.6 \times 4 = 6.4$**

### Step 1

Move the **slide** so that the left-hand **1** on the **C scale** is over the small **6** that falls between the larger **1** and **2** on the **D scale**. This location represents **1.6** in our calculation.

### Step 2

Find the large **4** on the **C scale**.



### Step 3

Read the number on the **D scale** that is exactly below the **4** on the **C scale**. It is **6.4** and that is the answer.





**Step 1**  
Move two 10's Earth bead up and one 10's Heaven  
bead down (=70)  
Then move four 1's Earth beads up to add 4 (=74)



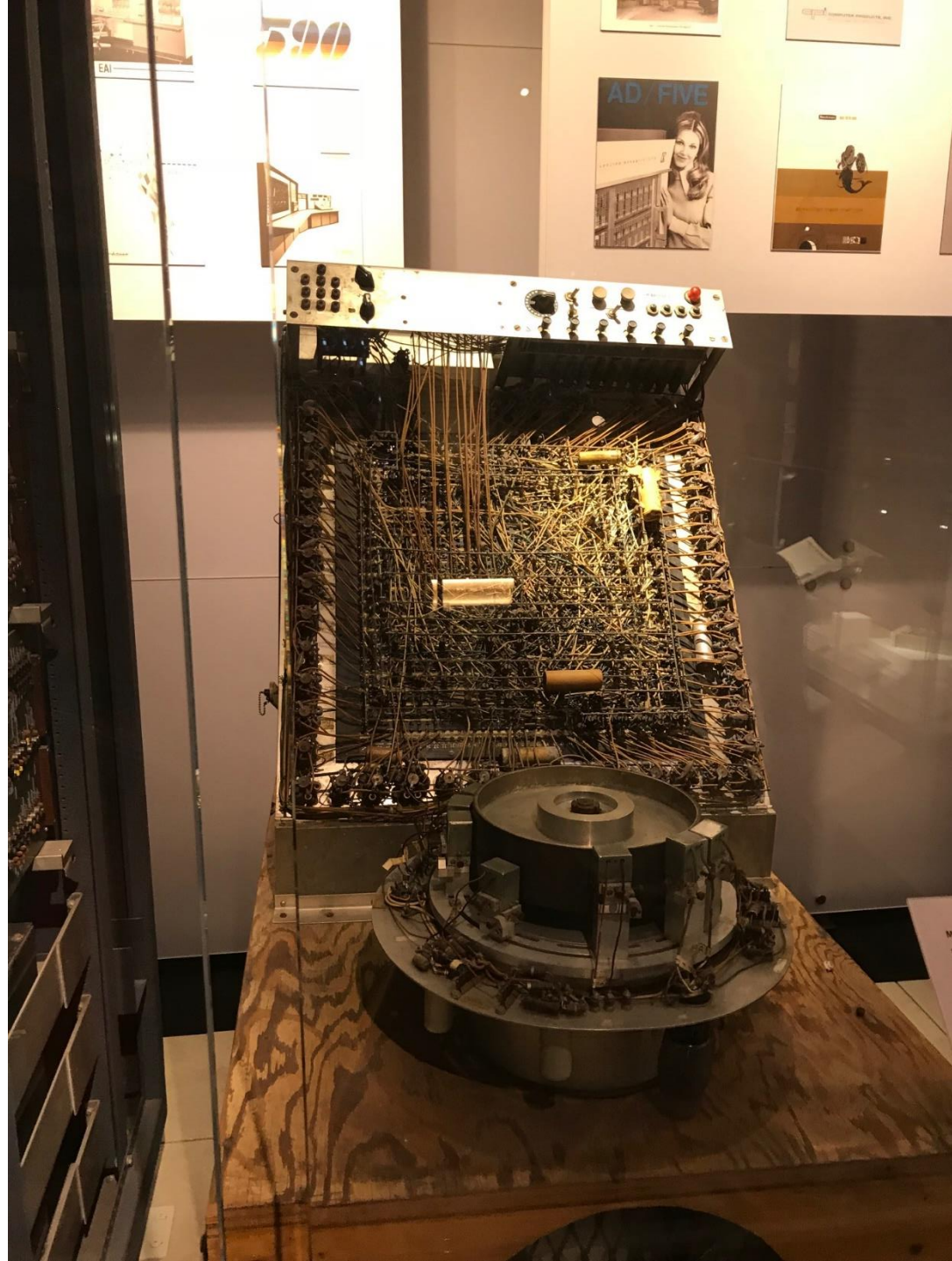
**Step 2**  
Try to move one 10's Heaven down to add 50,  
but it's already down...



**Step 3**  
So move it up to subtract 50 then move a 100's  
Earth bead up to add 100 (=124).  
\*This is a carry from 10's to 100's place!







Their assignment? Develop machines to crack German codes. Among their triumphs was Colossus, an electronic code breaking computer that remained classified until the 1970s.



**Colossus narrow tape pulley, UK, 1945**  
This is one of five surviving pieces of the Colossus machines used at Britain's Bletchley Park to break German Lorenz codes during WWII. Winston Churchill acknowledged that they shortened the war, but ordered the machines destroyed and kept secret.  
Source: *Life* (Bletchley Park Museum website) © 2012  
Gift of Tony Hooper, 2012/2

**ENIGMA: Chiffriermaschinen AG, Germany, ca. 1935**  
The machine was used by the German military in World War II. Messages sent by the machine were encrypted and sent by Morse code. Based on the machine, special-purpose machines in the US and Britain were developed for breaking efforts.  
Source: *Life* (Bletchley Park Museum website) © 2012  
Gift of Tony Hooper, 2012/2





Epsco ADDAVERTER  
Analog and Digital Computer Link Equipment

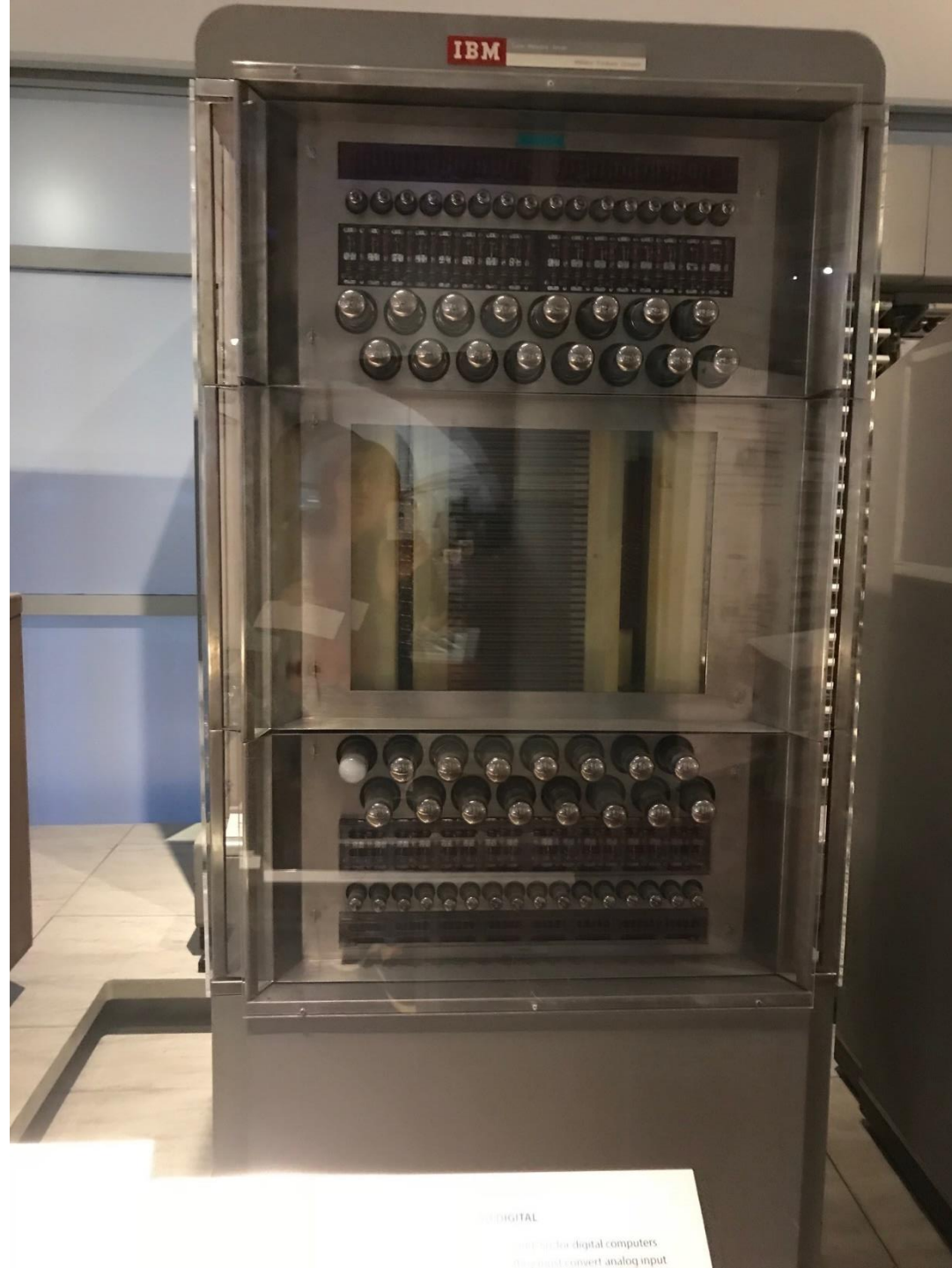
© Epsco Incorporated

### **The ADDAVERTER System, 1956**

Former UNIVAC engineer Bernie Gordon founded Epsco in 1953. A year later, Epsco introduced the Datrac, one of the earliest commercial analog/digital converters. Its equipment was also used to build hybrid analog-digital systems in the mid-1950s.

## **CONVERTING TO DIGITAL**

We live in an analog world. So, for digital computers to control operations they must convert analog input (continuous values, like electrical current from a temperature sensor) into digital data, process it, then convert it back to analog.



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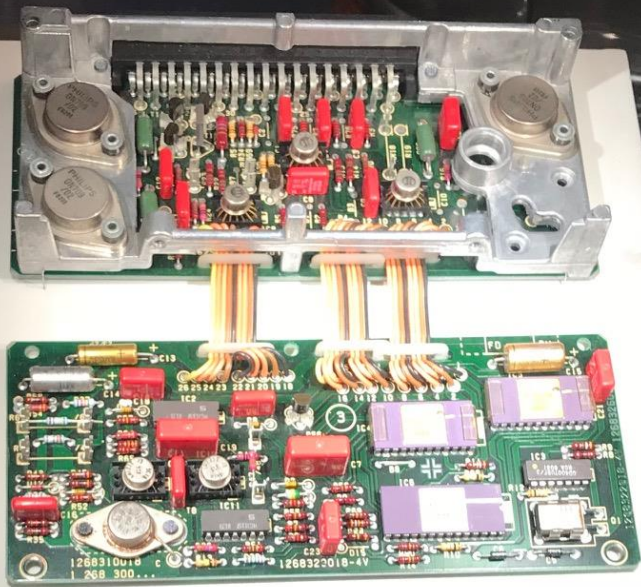
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DIGITAL

...for digital computers  
...convert analog input





**Bosch ABS-2 Controller, Robert Bosch GmbH, Germany, 1978**

The computerized ABS controller is only one part of the anti-lock brake system. It receives speed and acceleration information from wheel sensors and activates solenoid valves in the braking system. All components must endure harsh environmental conditions.

*Gift of Robert Bosch GmbH, 102711727*



### Wagon Wheel Poker Chips, 1970s

The Wagon Wheel's card room came under fire for non-compliance with California's 1997 Gambling Control Act. The bar closed in 2000.

Gift of T.R. Lett, 102674817



### Entrepreneurs Napkin, 1986

Bob Zeidman created this preprinted template to streamline the process of drawing start-up business plans on barroom napkins.

Gift of Bob Zeidman, 102716248





Apple Computer Inc.,

Processor Smurf board for  
ty of the PowerPC chip.



**Nike + iPod Sport Kit, Nike and Apple Inc., US, 2006**

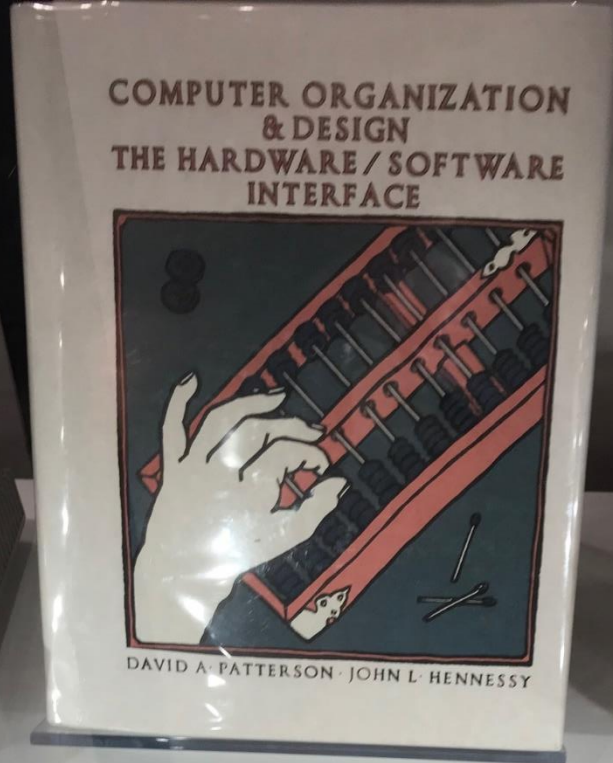
This shoe insert uses a Microchip Technology 8-bit RISC microcontroller  
to analyze a runner's performance.

*Gift of Jon Rubinstein, 102662392*



struments, US, ca. 199

or Architecture) RISC design



**Computer Organization and Design, 1993**

Professors David Patterson (Berkeley) and John Hennessy (Stanford), evangelists for the simplified RISC architecture, wrote this textbook.

*Gift of James R. Larus, 102624220*

**PowerPC predecessor board, Apple Computer, 1992**

Apple used this IBM POWER RISC processor for development tasks prior to availability of the

*Gift of Steve Jask, 102674143*

