



DIRECTIONS FOR USING NO. 450 POCKET SLIDE RULE

The No. 450 Slide Rule has application in the field of engineering, estimating, architecture, physics, chemistry, wherever various calculations may be made mechanically with greater ease and rapidity than by ordinary arithmetical methods, and usually with sufficient accuracy for all practical requirements.

The Slide Rule is a time and labor saving instrument for quickly solving problems involving multiplication, division, proportion, squares, square roots, cube and cube roots or any combination of these processes.

Trigonometric functions are also solved by means of the Slide Rule, but the beginner is advised to confine his study to the simple operations of multiplication and division on the "C" and "D" scales.

It should be remembered that the Slide Rule itself is accurate within about one-half of one per cent, and the accuracy of the answers obtained are limited only by the spacing of the lines on the scales and the ability of the user to estimate readings and setting the fall between the lines.

The C and D scales are identical and are numbered from 1 to 10, the spaces between the whole numbers decreasing steadily toward the right.

The Slide Rule consists of three parts, namely: the rule proper or body containing the A and D scales; the slide containing scales B, C1 and C; and the indicator, runner or cursor with a hair line in the center.

Scales C and D are used in multiplication, division and their combinations. Scales A and D are used for squaring and for finding the square roots of numbers. The C1 scale gives the reciprocal of any number on the scale C. It can be observed that the scales A and B are identical, scales C and D are also identical and that the C1 scale is the C scale in reverse direction.

On scales C and D, if 1 at the extreme left is taken as unity, then 1 at the extreme right of these scales is 10.

On scales A and B, if 1 at the extreme left is taken as unity, then 1 in the middle of the scale is 10 and at the extreme right is 100.

In order to familiarize you with the Rule, let us try a simple problem, where you already know the answer:

MULTIPLICATION

Example: 2×4 . Opposite 2 on scale D set 1 on scale C. Then move the indicator so that the hairline is over 4 on scale C. Directly below this 4 you will find 8, the answer.

DIVISION

Example: $8 \div 4$. Opposite 8 on scale D, set 4 on scale C. Look along C to the left, until you come to 1 at the end of the slide. Under this 1 you will find 2, the answer on scale D.

READING THE SCALES

Graduations on the Slide Rule represent figures and not measures of length.

To find a number, always read the first figure to the left on the prime line, the second figure of the number on the secondary line to the right thereof, and the third figure on the subdivision, thus to read 356, — prime 3, secondary 5 and subdivision 6.

THE DECIMAL POINT

In most cases, the operator should substitute round numbers for those appearing in the problem and determine the correct position of the decimal point by approximation. Where this is not feasible, a rough arithmetical calculation will serve to properly locate the decimal point.

SQUARES

To find the area of a square plot of ground measuring 9 yards on a side, set hair line of runner at 9 on Scale D and read 81 under hair line on Scale A.

PROPORTION

An aeroplane flying 150 miles an hour travels 30 miles in a given time. How far will an automobile traveling 35 miles an hour go in the same time? $150:30=35:X$. The work on the Slide Rule is as follows: Opposite 35 on D, set 150 on C. Opposite 30 on C read the answer 7 on D.

SQUARE ROOTS

How do you find the square root of 25? Set hair line of runner to 25 on scale A. Under hair line on scale D you will find the answer which is 5.

CUBES

What is the cube of 3? Set 1 of scale C over 3 on scale D. Opposite 3 on scale B read the result 27 on scale A.

LOGARITHMS

With the slide reversed, note the scale of equal parts (L) between the S and T scales. On this, logarithms of numbers on the D scale can be read to three figures, with the aid of the hair line of the runner.

For occasional reference, logarithms are read with the slide in its usual position (the scale of equal parts underneath) by setting the number on C above the right index of D and reading the value on the L scale under the hair line on the under side of the rule.

The practical use of this Slide Rule lies in the ability to read the graduations rapidly and correctly and this can be accomplished by actual practice.

On the under side of the Slide, a Decimal Equivalent Scale will be found and the upper part of the face of the Slide carries a 6" rule while the bottom part a metric scale up to 15. Also Equivalents-Settings will be found under the slide in the body of the rule proper.

The No. 450 Slide Rule is made and these instructions are printed in the U.S.A.

Manufactured by
G. FELSENTHAL & SONS
CHICAGO 51, ILL.