ACADEMY 310 CIRCULAR SLIDE RULE

Operating Instructions

MULTIPLICATION

Example I

Multiply 2·75 x 16·7 Answer = 45·925

Revolve the scale C until the 1 on Scale C (called the index) is over 2·75 on Scale D.

Now find 16·7 on Scale C and the answer lies underneath it on Scale D.

It is usual to revolve the cursor along until the centre red line coincides with the 16·7 on Scale C—the answer 45·9 can then easily be read off Scale D.

Note.—No greater accuracy than 45·9 can be achieved and the position of the decimal point must be fixed by inspection.

Example II

Multiply 192 x 72·1 Answer = 13843

In this case you revolve the index on Scale C over the 192 on Scale D.

Find 721 with the cursor on Scale C and read off the answer underneath on Scale D.

The nearest answer obtainable lies between 13830 and 13850

DIVISION

Example IV

To divide say 64 by a series of numbers.

Find 64 on Scale D and place the cursor line over it. Keeping the cursor stationary find the number which you wish to divide by (divisor) on Scale C and revolve Scale C along until that number coincides with the line on the cursor. The answer will lie on Scale D against the index of Scale C.

Note the positions on the rule are the same whether the dividend be 64, 0·64 or 6400 and the divisor 32, ·032 or 3200.

COMBINED MULTIPLICATION & DIVISION

Example V

To find 3/16th of 5·2/7ths.

This sum can be written 3/16 x 37/7 and can be tackled in various ways on the slide rule.

Perhaps the easiest is first to multiply 3 by 37 and then divide the product by 7 and the answer by 16.

The operations are as follows:

Place the Scale C index over 3 on Scale D and revolve the cursor over 37 on Scale C. The product lies where the cursor line cuts Scale D at 111.

To divide by 7, hold the 111 on the cursor, and revolve 7 of Scale C on the cursor line. The answer (15·86) lies on Scale D under the Scale C index.

To divide by 16, hold the position by revolving the cursor to 15·86 on Scale D (where the Scale C index is) and then revolve the 16 on Scale C to the cursor line.

The final answer (·991) lies against Scale C index on Scale D.

These operations can be performed in 20 seconds or less with practice.

Position of the decimal point

The quickest way to determine the position of the decimal point is to make a quick mental calculation. This has proved to be more effective than any set rules.

Example. 33 x 600

Answer is in the region of 20,000, and not 2,000 or 2,000,000.

SQUARE, SQUARE ROOT

Example VI $2 \cdot 2^2$ Answer = 4.84

Put cursor on 2·2 on Scale C, and read result on Scale A. The answer lies between 4·8 and 4·85.

Example VII $\sqrt{15}$ Answer = 3·87

Put cursor line on 15 on Scale A, and read result on Scale C. The answer lies between 3·86 and 3·88.

CUBE SCALE

(sometimes marked "K")

This scale is used for quickly finding the cube or cube root of a number.

Example VIII To find the cube root of 19·7.

As two whole numbers precede the decimal point use the middle of the three equal scales (into which the cube scale is divided). Place the cursor line on 19·7 and read off 2·7 approximately underneath on the C scale. For amounts with one or four whole numbers before the decimal point use the lower section of the cube scale and so on.

RECIPROCAL SCALE (CI)

The reciprocal scale on the smaller disc, apart from its use in calculating the reciprocal of numbers, can be used in multiplication to save unnecessary movement of the disc, but beginners are advised first to master the use of the ordinary scales to avoid confusion.

Example IX Multiplication 82 x 3 Answer = 246

Set cursor line over 82 on Scale D, and revolve 3 on reciprocal scale along to cover it. Read result, 246, on Scale D, under index of Scale C.

Example X Division $\frac{25}{4}$ Answer = 6·25

Set the index on Scale C over 25 on Scale D, move cursor to 4 on reciprocal scale, and read result, 6·25, where cursor line cuts Scale D.