RUSSIAN CIRCULAR SLIDE RULE (model KL-1)

50 millimeters in diameter, The KL-1 is intended for performing trigonometric and mathematical operations:

1. Multiplication
2. Division
3. Squaring
4. Extraction of a square root.
5. Finding of trigonometric functions of a sine
6. Finding of trigonometric functions of a tangent
7. Finding inverse trigonometric functions.
8. Calculation of the area of a circle.

The circular slide rule consists of:

- Housing with two knobs,
- 2 dials (one of which revolves with the aid of the **black knob**),
- 2 pointers (which revolve in unison with the aid of the **red knob**), and a fixed indicator.
- The fixed indicator is on side 2, directly aligned with the black knob

SIDE 1 : 3 scales on the fixed dial.

1. The outer scale - for basic calculating. It is the inverse of the inner moveable scale on side 1 (equivalent to a DI scale);
2. The middle scale S - for calculating the sines of angles;
3. The inner scale T - for calculating the tangents of angles.

SIDE 2: 2 scales on the moveable dial.

1. The outer scale - the scale of the squares (equivalent to an A scale);
2. The inner scale -for basic calculating (equivalent to a C scale)

MULTIPLICATION
(using the moveable internal scale, fixed indicator, and moveable pointer on side 2)

1. Rotate the black knob (2) to position the index (of the inner moveable scale) under the fixed indicator (5).
2. Rotate the red knob (3) to position the moveable pointer over the first cofactor (on the inner moveable scale).
3. Rotate the black knob to position the second cofactor (on the inner moveable scale) under the fixed indicator.
4. Read the product under the moveable pointer (on the inner moveable scale).

DIVISION
(using the moveable inner scale, fixed indicator, and moveable pointer on side 2)

1. Rotate the black knob to position the dividend (on the inner moveable scale) under the fixed indicator.
2. Rotate the red knob to position the moveable pointer over the divisor/denominator (on the inner moveable scale).
3. Rotate the black knob to position the index (on the inner moveable scale) under the moveable pointer.
4. Read the quotient under the fixed indicator (on the inner moveable scale).

SQUARING
(using both the inner and outer moveable scales, the fixed indicator, and the moveable pointer on side 2)

1. Rotate the black knob to position the root number (on the inner moveable scale) under the fixed indicator.
2. Under the same indicator, read the square of the root number on the external moveable scale.

THE EXTRACTION OF SQUARE ROOT
(using both the inner and outer moveable scales, the fixed indicator, and the moveable pointer on side 2)

1. Rotate the black knob to position the radicand (the squared number) (on the external moveable scale) under the fixed indicator.
2. Under the same fixed indicator, read the square root of the radicand on the internal moveable scale.

FINDING TRIGONOMETRIC FUNCTIONS OF ANGLE
(using the fixed scales and the moveable pointer on side 1)

1. Rotate the red knob to position the pointer over the angle in question.
   Use the inner spiral "T" scale for tangents or the middle "S" scale for sine's.
2. Under the same pointer, read the function of the angle on the fixed outer scale.

FINDING INVERSE TRIGONOMETRY FUNCTIONS
(using the fixed scales and the moveable pointer on side 1)

1. Rotate the red knob to position the pointer over the value of the trig function (on the outer fixed scale).
2. Under the same pointer, read the angle (on the T or S scale) corresponding to the function.

CALCULATION OF THE AREA OF CIRCLE
(using the inner and outer moveable scales, moveable pointer, and fixed indicator on side 2)

1. Rotate the black knob to position the "C" on the inner moveable scale under the fixed pointer.
2. Rotate the red knob to position the moveable pointer over the diameter (on the inner moveable scale) of the circle in question.
3. Rotate the black knob to position the index of the outer moveable dial under the fixed indicator.
4. Under the moveable pointer, read the area of the circle on the outer moveable scale.