TABLE OF SCALES

function is usually relative to C or D

Scale	**Value** Relative to C/D	**Use**
A	**X Squared**	**Scale of squares** on the Body. Extended range multiplication against B. Squares or square roots against D.
B	**X Squared**	**Scale of squares** on the Slide. Extended range multiplication against A.
C	**X**	**Fundamental scale** on the Slide.
CF	**pi** x **X**	**Folded Fundamental scale** on the Slide. Usually begins at Pi, for multiplication/division without resetting the index, or by pi.
Ch	**Atomic Weight**	**Chemical scale** on the Body. A very unusual scale, found on specialized chemical slide rules like the Hemmi 257. The Chemical symbol on the Ch scale is read on the cursor against the D scale on the *opposite side of the rule* to give the **atomic weight** for the element or molecule shown. The answer is two digits if no line is present, 3 digits if a line over the symbol is present, and one digit if the line is under the symbol.
CI	**1/X**	**Reciprocal scale** on the Slide. Gives reciprocal of C.
CIF	**1/pi** x **X**	**Folded reciprocal scale** on the Slide. Usually begins at Pi, for multiplication/division without resetting the index, or by pi.
D	**X**	**Fundamental scale** on the Body.
DF	**pi** x **X**	**Folded Fundamental scale** on the Body. Usually begins at Pi, for multiplication/division without resetting the index, or by pi.
DI	**1/X**	**Reciprocal scale** on the Body. Gives reciprocal of D.
DIF	**1/pi** x **X**	**Folded reciprocal scale** on the Body. Usually begins at Pi, for multiplication/division without resetting the index, or by pi.
K	**X cubed**	**Scale of cubes** on the Body. Cubes or cube roots relative to D.
L	**log X**	**Mantissa scale**, linear scale converts log nature of other scales. Logarithms to base 10.

R1 / R2 Sq1 / Sq2	**square root x**	This scale is basically a **D scale that has been "stretched" to twice its former length**. A number that is set on the D scale will have its square root on the SQ/R scale. If the number has an odd number of digits (or leading decimal zeroes), then the odd numbered scale (Sq1/R1) is used. If the number has on even number of digits (or leading decimal zeroes), then the even numbered (Sq2/R2) scale is used. If a number is set on the Sq/R scale, then its square can be read on the D scale.
S	**sin x**	**Scale of sines** on the slide. Used to determine sines/cosines of angles between 5.7 and 90 degrees. This is a single line scale, with the increasing numbers (black/blue) being used for sines and the decreasing numbers (red/green) being used for cosines. POST and K+E reverse which appears on the left and right of the scale marks, but in all cases, the numbers given in the default scale color are the SINES. K+E rules also tilt the numbers to show which direction to read the scale. Read this value **(from 0.1 to 1.0)** against the C or D scale.
ST SRT	**sin/tan x sin/radian/tan x**	**Scale of sines/tangents** on the slide. Used to determine sines and tangents of angles between 0.57 and 5.7 degrees. This is really just an extension of the S scale, which precedes the S scale values. The sines and tangents are nearly equal so that a single scale can be used for both. The tangents of angles between 84.3 and 89.43 can be read on this scale if the complement of the angle (90 - angle) is set on this scale. Read this value, **(from 0.01 to 0.1)** against the C or D scale.
T	**tan/cot X**	**Scale of tangents and cotangents** on the slide. Used to determine tangents and cotangents of angles between 5.7 and 84.3 degrees. There are 2 variations of this scale in use. The first being known as a "single scale" whereby the angles from 5.7 to 45 degrees being printed in increasing order (in black or blue), and angles between 84.3 and 45 degrees being printed in decreasing order (usually in red). When this arrangement is used, then tan(5.7) to tan(45) is read on the C or D scale **(0.1 to 1.0)**, and tan(45) to tan(84.3) is read on the CI scale. Conversely, cot(45) to cot(84.3) is read on the CI scale **(1.0 to 10.0)** and cot(5.7) to cot(45) being read on the C scale. The second arrangement is known as a "double scale" whereby the angle is set above the line it is between 5.7 and 45 degrees, and below the line if it is between 45 and

		84.3 degrees. Tangents are then read on the C or D scale, and cotangents read on the CI scale. Note that the CI scale is often NOT present in a way that permits this setting on one side.

Thanks to Craig Kielhofer for assistance in creating the trig scale entries.

Special Scale Marks

Scale Mark	Meaning	Value
p	**(pi / 180)**	**0.01745**
p'	**60 (pi / 180)**	**3438**
p''	**3600 (pi / 180)**	**206265**
C	**sqr. root (4 / pi)**	**1.128**
C1	**sqr. root (40 / pi)**	**3.57**
pi	**pi**	**3.1416**

What You Can And Can't Do With A Slide rule:

Slide rules are based on **logarithmic distance relationships**, and can multiply, divide, take roots and powers, calculate logs and a wide variety of trig functions. They cannot add or subtract, and they require the user to keep track of the decimal point/order of magnitude in his or her head. They are very good for quickly solving complex formulas, especially those with many multiplied or divided terms, and visually reveal ***ranges of answers*** in a way that calculators cannot do. The essential accuracy of a slide rule is generally ***three significant figures*** over a very wide dynamic range. This accuracy is more than adequate for many engineering decisions and calculations, but it is not ideal for computing moon shots.

It is worth mentioning however, that many bridges, buildings, basic and advanced electronic designs, and space ballistics work was done with nothing more advanced than an ordinary 10" slide rule. **IN FACT**, there is some ***rocket science here***, as Pickett rules were carried (and presumably used) on three **Apollo Space Missions**, a fact that was loudly advertised on some Pickett boxes. We will assume they were not used to swat space flies, and had some real merit, as every payload ounce was very precious. You could calculate exactly ***how*** precious, if you had one.