INSTRUCTIONS for the CRAFT SLIDE RULE

Devised and Compiled by

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The rule is simply designed for costing timber, sheet metal, hardboard, plywood, etc., and it can be used without practice, the answer being found in only one setting of the slide. **No knowledge of decimals is necessary.** Because it is so easy to use, this rapid reckoner cuts down costing problems, saving both time and effort, and giving the exact answer in a few seconds. Bills and invoices can be made out or checked with rapidity and accuracy, pieces and lengths small or large can be priced without the slightest difficulty, and all as easily as reading a measurement on a two foot rule. But despite its simplicity this rule can be used as a versatile instrument for other calculations involving units of

There are four scales clearly marked and lettered A, B, C and D. Scale C is marked from right to left, showing half divisions up to 12, full divisions from 12 to 60, and from 60 to 140 in fives only.

Scales A, B and D are marked alike from left to right in groups of twelve. In scale A the markings may be read as pence and halfpence up to 1/-, from 1/- to 3/- as pence only and from 3/- to 10/- as threepences, from which the pence can be judged. Alternatively the markings may be read as inches and half inches up to 1ft., as inches from 1ft. to 3ft. and as three inch spaces from 3ft. to 10ft.

A station marked □ is provided at the right of scale D opposit which area may be read in square feet on scale C.

In the case of an area of less than 1 sq. ft., the number of squar inches will appear opposite the 1 at the extreme left of scale D.

COSTING

A problem which frequently occurs is that of finding the cost of piece of odd size when the the length, width and price per square foo is known.

This problem is solved in a single movement if the width in inche on scale C is set opposite the length on scale D. Opposite □ scale D read on scale C the area in square feet and opposite the price square foot on scale B read the cost on scale A.

e.g.: 5′—3″ x 8″ at 1/4 per sq. ft.

8″ on scale C is brought to 5′—3″ on scale D.

If the area being considered is less than 1 sq. ft. the area in square inches will appear on scale C opposite 1 at the left of scale D.

e.g.: 1′—3″ x 5″ at 2/3 per sq. ft.

5″ on scale C is brought to 1′—3″ on scale D.
Opposite 1 at the left of scale D the area 75 sq. in. is found on scale C, and opposite 2/3 per sq. ft. on scale B, the cost 1/2 is found on scale A.

Costs over 10/- may be found by making a reduction in length, width or price so that the answer appears within the normal scope of the rule, and then making a proportionate increase in the answer.

e.g.: 15′ x 7in. at 3/- per sq. ft.

It is obviously convenient to consider this as three lengths of 5′ each and 5′ x 7″ at 3/- per sq. ft. gives a cost of 8/9.

Three such pieces, or a length of 15′, will cost 3 x 8/9, which is 26/3.
Though this method takes a little longer than the following one, it may recommend itself by its simplicity.

An alternative method of costing unusually large amounts is to call every inch on scale D one foot, which has the effect of dividing the length by 12, and by calling every penny on scale A one shilling, which has the effect of multiplying by 12.

The area in this case is read opposite 1 at the centre of scale D, where *it is found to have been automatically multiplied by 12 and expressed* as square feet.

e.g.: 15′ x 7″ at 3/- per sq. ft.

7″ on scale C is brought to 15 on scale D.
i.e., to where the scale shows 1′—3″, which is 15″.
Opposite 3/- on scale B the cost 26/3 is found on scale A.
i.e., where the scale shows 2/2¼, which is 26¼d., to be called 26/3.
The area shown as 105 sq. in. opposite 1 at the left of scale D is automatically multiplied by 12 and expressed as sq. ft. opposite 1 at the centre of scale D where it may be read as 8¾ sq. ft.

Finding the cost per foot of lengths priced in £ s. d. per foot run usually involves reducing the price to pence and dividing by 100.
i.e. multiplying $\frac{240}{100}$ or 2·4

A station marked £ per 100 is provided on scale D which performs this calculation automatically so that the cost per foot can readily be found by bringing the price in £ s. d. on scale C opposite the station and reading the answer on scale A opposite station $\frac{1}{100}$ on scale B.

e.g.: To find the cost per foot at £6/5/0 per 100ft.

The price £6/5/0 on scale C is brought to station £ on scale D.
The £6 is marked and the 5/- may be estimated as midway between 6 and 6½.
Opposite station $\frac{1}{100}$ on scale B read the cost of 1/3 on scale A.

Good proportion is not governed by arbitrary rules but some combinations of length, width and depth have been found to be more pleasing than others and the following proportions may serve as a guide.

Extra stations on the A scale which are marked ▯ , □ and ▭ , when brought opposite point P on the B scale, give three different accepted scales of good proportion, the markings on scales A and B being read in feet and inches.

When point P is set at station ▯ , any width in scale A used with its opposite in scale B will give a rectangle, the base of which is the hypothenuse of a right angled triangle whose other angles are 60 degrees and 30 degrees, and the width of which is the perpendicular height of the triangle.

i.e. $\frac{1}{2 \cdot 315} = \frac{\text{width}}{\text{length}}$

When set at the remaining stations the scales give length and width in the following proportions:—

Station □

In a right angled triangle with sides L and ½ L, a length L is marked off the hypothenuse, the remainder of which is used as length.

i.e. $\frac{1}{1 \cdot 639} = \frac{\text{width}}{\text{length}}$

Station ▭

$\frac{\sqrt{1}}{\sqrt{2}} = \frac{1}{1 \cdot 414} = \frac{\text{width}}{\text{length}}$

If it is required to make a rectangle of length 1′—6″, a choice is available between three rectangles of good proportion.

With P set at station ▯ opposite 1′—6″ in scale B, a suggested width of 7¾″ is found in scale A.

With P set at station □ opposite 1′—6″ in scale B, a suggested width of 11″ is found in scale A.

With P set at station ▭ opposite 1′—6″ in scale B, a suggested width of 1′—0¾″ is found in scale A.

Each of these three rectangles is well proportioned and bearing in mind the function of the desired rectangle, choice may be made of the most suitable one by setting point P at the appropriate station.

When dealing with three dimensions, the method is the same but there is choice between nine different shapes as the stations may be used separately or in any combination to give the desired effect.

e.g.: To find the dimensions of a cabinet of height 1′.
Set P at station ▭
Opposite 1′ on scale B find 8½″ on scale A.

Set P at station □
Opposite 1′ on scale B find $5\frac{3}{16}$″ on scale A.
The cabinet will be 1′ high x $8\frac{1}{2}$″ wide x $5\frac{3}{16}$″ deep provided that in this form it is suited to its purpose.

e.g.: To find the dimensions of a cigarette box of 3″ width inside.
Set P to station □
Opposite 3″ on scale A find $4\frac{15}{16}$″ on scale B.
Opposite 3″ on scale B find $1\frac{13}{16}$″ on scale A.
The inside dimensions of the box will be $4\frac{15}{16}$″ long x 3″ wide x $1\frac{13}{16}$″ deep.

To find the cost per square foot of timber priced per cubic foot.

Reverse the slide and set the numbers at the left of the two top scales *so that a fraction* indicates the thickness of the timber. Find the price *per cubic foot* in shillings on the lower scale, and opposite on scale A read *the cost* of one square foot of the timber.

e.g.: To find the cost of 1 sq. ft. of $\frac{5}{8}$″ thick at 45/6 per cubic foot.
Reverse the slide and bring 5 at the left of scale A over 8 on scale C to make the fraction $\frac{5}{8}$.
Opposite $45\frac{1}{2}$/- on scale C read $2/4\frac{1}{2}$ on scale A.

Any thickness can be dealt with, $\frac{7}{16}$, $\frac{1}{2}$, $\frac{9}{16}$, etc.

Thicknesses over 1″ can be expressed as fractions: $\frac{9}{8}$ for $1\frac{1}{8}$″, $\frac{5}{4}$ for $1\frac{1}{4}$″, etc.

Prices per sq. ft. "as one inch thick" may be converted to the correct price for the thickness concerned by means of a similar method. With the slide in the normal position but adjusted so that the thickness fraction is obtained at the left on scales A and B, find the price per square foot "as one inch" on scale B, and opposite one scale A is found the true price per sq. ft. for the thickness concerned.

e.g.: Find the price per sq. ft. of $\frac{3}{4}$″ thick at 5/- per sq. ft. as one inch.
With the slide in the normal position set scales A and B so that 3 *at the left of scale A comes over* 4 at the left of scale B.
Opposite 5/- on scale B find the true price of 3/9 per sq. ft. on scale A.

To cost metal of all kinds in sheet, or rod, nails, etc., priced per pound *weight, bring the number of pounds on scale C to the arrow on scale D, and reading the price per lb. on scale B* find the cost opposite on scale A.

If 1lb. on scale C is brought to the arrow, 16 is seen to be opposite *at the left of scale D. At this point then may be read ounces.*

e.g.: $1\frac{1}{2}$lb. at 3/6 per lb.
Set $1\frac{1}{2}$lb. on scale C to the arrow, or 24oz. to the 9 mark.
Opposite 3/6 on scale B read 5/3 on scale A.

e.g.: $5\frac{3}{4}$oz. at 3/- per lb.
Set $5\frac{3}{4}$oz. on scale C to the 9 mark.
Opposite 3/- on scale B read 1/1 on scale A.

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