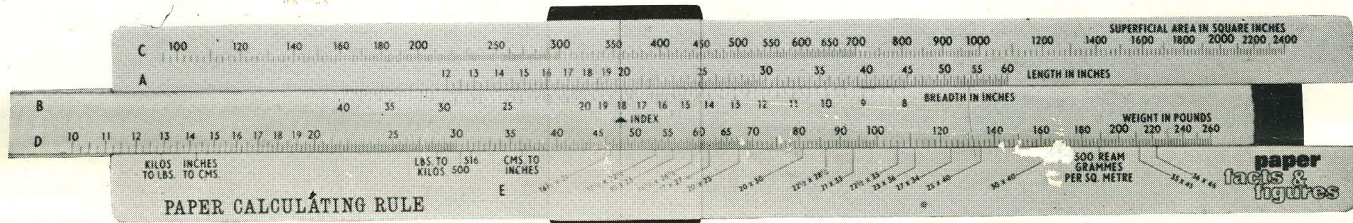


# Operating Instructions



# Paper Calculating Rule

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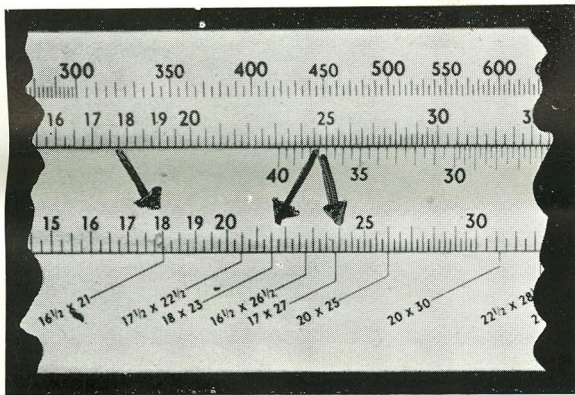
## Introduction

This calculator has been specially evolved by Paper Facts & Figures Limited and is an advanced method of carrying out the various calculations required by paper buyers, estimators and others involved in the use and distribution of paper.

It is extremely accurate and easy to use and the special scales and index points are arranged so that standards, constants and equivalents can be located quickly and positively.

The various functions of the rule are quite straightforward but, like most versatile instruments, it is necessary to follow the correct procedure. Learn to use it confidently and it will save you endless time and remove the tedium from paper calculations.

The rule is manufactured to the highest standards from selected materials and is robust, stable, non-flammable and resistant to mould and moisture, but to obtain the maximum life from it, there are certain recommendations on care and handling and you are advised to read the notes on page 14.



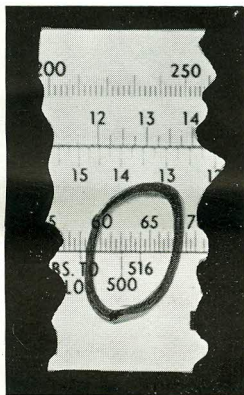
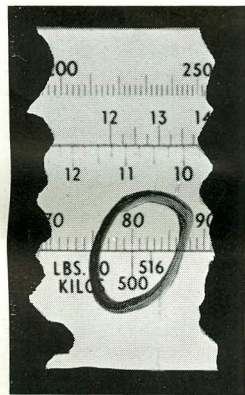
## Equivalent weights of standard sizes

*Function.* This gives a direct conversion from a known weight per ream for a standard size to the equivalent weights for other standard sizes.

*Method.* Set the known weight in pounds on scale D opposite the known size on scale E. Weights for the other standard sizes can then be read on scale D against their respective marks on scale E.

*Example.* What are the equivalent weights of  $18 \times 23$   $21\frac{1}{2}$  lbs?

Set  $21\frac{1}{2}$  on scale D opposite the mark for  $18 \times 23$ . The equivalent weight in  $16\frac{1}{2} \times 21$  is therefore 18 lbs, in  $17 \times 27$  it is 24 lbs, and so on.



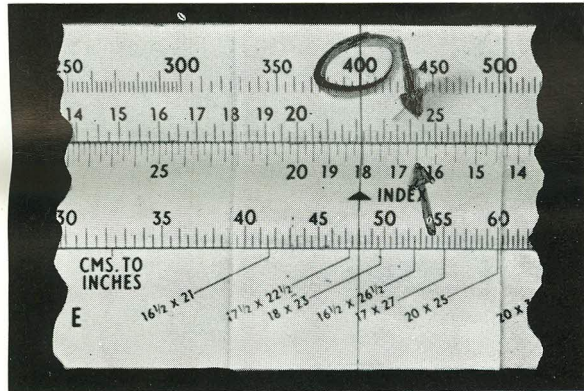
## Weight per 500 ream to weight per 516 ream and vice versa

*Function.* A direct conversion when one weight is known.

*Method.* To convert the weight per 500 ream to weight per 516 ream set the known weight on scale D opposite the 500 mark. The weight per 516 ream is then read opposite the 516 mark. If the weight per 516 ream is known, set this against the 516 mark and read the equivalent per 500 weight off opposite the 500 mark.

*Examples.* Weight per 500 ream is 80 lbs. What is the weight per 516 ream? Set 80 on scale D opposite the 500 mark. Now read the weight per 516 ream opposite the 516 mark—answer  $82\frac{1}{2}$  lbs.

Weight per 516 ream is 64 lbs. What is the weight per 500 ream? Set 64 on scale D opposite the 516 mark. Weight per ream (500's) is therefore 62 lbs.



## Superficial area

The superficial area of any sheet size from  $8 \times 12$  to  $40 \times 60$  can be found by setting the length on scale A to coincide with the breadth on scale B then moving the cursor line to the index mark. Then answer appears under the cursor line on scale C.

*Example.* Find the superficial area of a sheet size  $16\frac{1}{2} \times 24\frac{1}{4}$ . Set  $16\frac{1}{2}$  on scale A to  $24\frac{1}{4}$  on scale B. Move cursor line over index mark. Read answer on scale C—400 sq. ins.

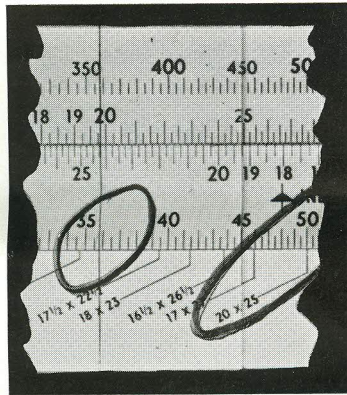
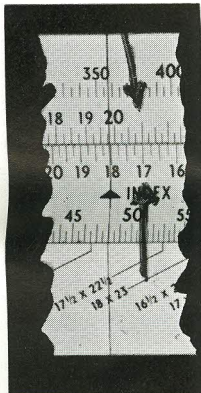
*Note.* This function is obviously multiplication and can, with certain limitations, be used in other types of calculations. By reversing the operation division can be carried out.

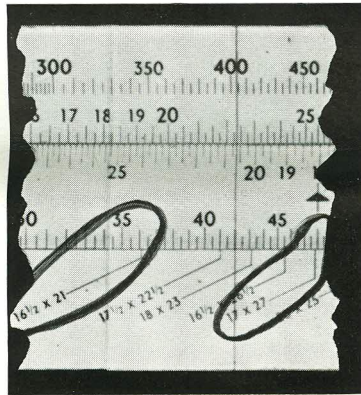
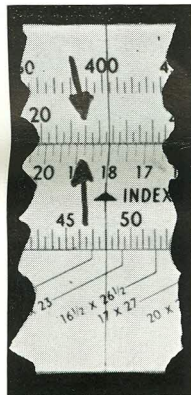
## Weight of non-standard size equivalent to standard size and weight

*Function.* This calculates the superficial area of the non-standard sheet then compares this with the area of the various standard sizes in the selected weights. This is done in three simple movements.

*Method.* Set the length of the non-standard sheet on scale A opposite the breadth on scale B. Move cursor so that the line is over the index mark. Keeping the cursor still, move the slide until the known weight on scale D coincides with the known standard size required on scale E. Equivalent weight for non-standard size can now be read under cursor line on scale D.

*Example.* What is the equivalent weight per ream for a sheet size  $17 \times 21$  in substance of  $20 \times 25$  50 lbs? Set 17 on scale B against 21 on scale A. Move cursor line over index mark. Without moving cursor, move slide until 50 is opposite the mark for  $20 \times 25$ . Answer on scale D under cursor line is  $35\frac{3}{4}$  lbs.





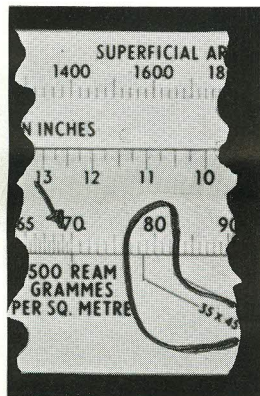
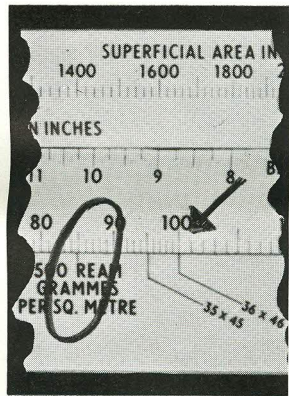
## Weight of standard size equivalent to non-standard size and weight

*Function.* Reverse of previous function.

*Method.* Set length of non-standard sheet on scale A against breadth of non-standard sheet on scale B. Move cursor line over index mark. Keep cursor still and move slide until weight of non-standard size on scale D coincides with cursor line. Equivalent weight of standard sizes can now be read on scale D opposite appropriate marks.

*Example.* The weight per ream of a sheet size  $18\frac{3}{4} \times 21\frac{1}{2}$  is 42 lbs; what is the equivalent weight in  $16\frac{1}{2} \times 21$  and  $17 \times 27$ ? Set  $18\frac{3}{4}$  on scale B opposite  $21\frac{1}{2}$  on scale A. Move cursor over index mark. Keep cursor still and move slide until 42 on scale D is under cursor line. Read weights on scale D opposite  $16\frac{1}{2} \times 21$ , answer 36 lbs, and opposite  $17 \times 27$ , answer 48 lbs.





## Grammes per square metre from known weight of standard size

*Function.* Direct-reading conversion.

*Method.* Set weight on scale D opposite the mark for the standard size. Equivalent g.s.m. can be read on scale D opposite *Grammes per square metre* mark.

*Example.* What is the g.s.m. equivalent to  $36 \times 46$  100 lbs? Set 100 on scale D opposite mark for  $36 \times 46$ . 85 is therefore the g.s.m. appearing opposite the *Grammes per square metre* mark.

## Weight of standard size from known g.s.m.

*Function.* This is the reverse of the previous function.

*Method.* Line up the g.s.m. figure on scale D opposite the g.s.m. index mark. Now read off equivalent weight for standard size required.

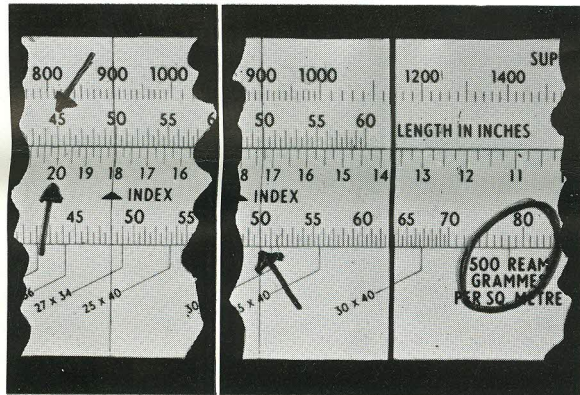
*Example.* Find the equivalent in  $35 \times 45$  to 70 g.s.m. Set 70 on scale D opposite g.s.m. index mark. Read off answer against the mark for  $35 \times 45$ — $78\frac{1}{2}$  lbs

## G.s.m. from known weight of non-standard size

*Function.* This compares the superficial area of the non-standard sheet with a square metre then automatically converts the known weight into the equivalent g.s.m. figure.

*Method.* Line up the length of the non-standard sheet on scale A opposite the breadth on scale B. Place cursor line over index mark. Keeping the cursor stationary, move slide until the known weight on scale D is under cursor line. The g.s.m. can then be read on scale D opposite the g.s.m. index mark.

*Example.* A sheet  $20 \times 45$  is 50 lbs per ream. What is the equivalent g.s.m.? Set 20 on scale B opposite 45 on scale A. Move cursor line over index mark. Position 50 on scale D under cursor line. Answer, opposite g.s.m. index mark, 78.



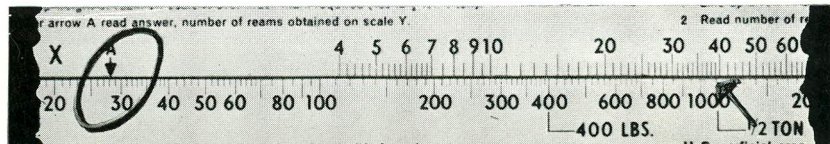
## Number of reams per 100 lbs, 400 lbs, $\frac{1}{2}$ ton, etc., for any given weight per ream

*Function.* Divides the total weight of paper by the weight per ream to give number of reams.

*Method.* Using the scales on the back of the calculator, set the weight per ream on scale X opposite the index mark for the total weight in question (100 lbs, 400 lbs,  $\frac{1}{2}$  ton, etc). Number of reams can now be read on scale Y opposite mark A.

*Example.* How many reams of 39 lbs are obtained in  $\frac{1}{2}$  ton? Set 39 on scale X against  $\frac{1}{2}$  ton mark on scale Y. The answer, 28 reams, is shown opposite arrow A.

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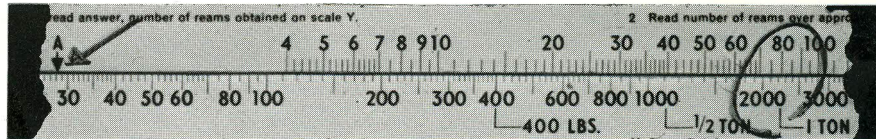
## Number of reams per ton, etc., which can be purchased in a given paper weight

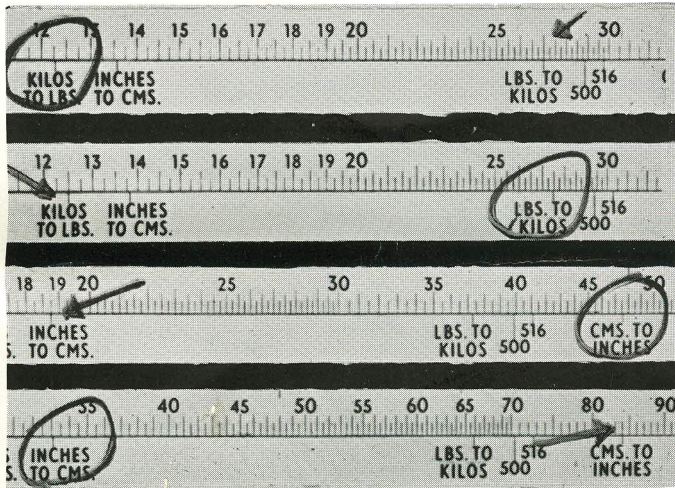
*Function.* This gives a quick check and shows at a glance the number of reams needed to make up a minimum total weight.

*Method.* Set arrow A against paper weight on scale Y. Read off number of reams opposite index mark for total weight (100 lbs, 400 lbs, etc).

*Example.* How many reams of 28 lbs should be purchased to make up a minimum order of 1 ton? Line up arrow A opposite 28. Read off on scale X opposite mark for 1 ton. Answer 80 reams.

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## Metric conversions

**lbs to kilos.** Set number of <sup>lbs</sup> kilos on scale D opposite the index *lbs to kilos*. Read off answer on scale D opposite *kilos to lbs* mark.

*Example.* What is 27 lbs in kilos? Answer: 12.25 kilos.

**Kilos to lbs.** Set number of  <sup>kilos</sup> lbs. on scale D opposite the mark *kilos to lbs*. Answer, opposite *lbs to kilos* mark.

*Example.* What is 125 kilos in lbs? Answer 275 lbs. Note that in this example, setting 125 would have meant that the *lbs to kilos* mark would have been off scale D. Therefore 125 was set as 12.5 and the answer compensated by multiplying by 10.

**Inches to centimetres.** *Example.* What is  $18\frac{3}{4}$  in. in cms? Set  $18\frac{3}{4}$  on scale D opposite *inches to cms* mark then read answer opposite *cms to inches* mark. Answer: 47.5 cms.

**Centimetres to inches.** *Example.* What is 84 centimetres in inches? Set 84 against the *cms to inches* mark and read off answer against the *inches to cms* mark. Answer: 33 ins.

## Care of the calculator

The calculator is a precision instrument but is nevertheless robust and capable of withstanding a great deal of hard use. However, in the interests of the user and to make certain that it retains its high standard of accuracy throughout its life, these recommendations should be followed :

Keep it in its box when not in use.

Avoid handling with soiled or chemically stained fingers.

Do not expose it to extremes of temperature and particularly avoid leaving it for any length of time in direct sunlight.

The cursor spring should always be at the top. If the cursor comes off take care that the spring is located smoothly when it is replaced.

On no account should the scales or cursor be cleaned with an abrasive compound. A light rub from time to time to remove dust is usually adequate but, if necessary, a cleaning paste (obtainable at drawing office suppliers) may be used.

## Decimal tables

Most people find it easier and more convenient to work in decimals on most calculations. Here then is a table giving the decimals of the most frequently used fractions:

$\frac{1}{16}$	0.0625	$\frac{3}{8}$	0.375	$\frac{11}{16}$	0.6875
$\frac{1}{8}$	0.125	$\frac{7}{16}$	0.4375	$\frac{3}{4}$	0.75
$\frac{3}{16}$	0.1875	$\frac{1}{2}$	0.5	$\frac{13}{16}$	0.8125
$\frac{1}{4}$	0.25	$\frac{9}{16}$	0.5625	$\frac{7}{8}$	0.875
$\frac{5}{16}$	0.3125	$\frac{5}{8}$	0.625	$\frac{15}{16}$	0.9375

Here also are some useful equivalents—shillings and pence expressed as decimals of a £:

19/-	0.95	14/-	0.7	9/-	0.45	4/-	0.2
18/-	0.9	13/-	0.65	8/-	0.4	3/-	0.15
17/-	0.85	12/-	0.6	7/-	0.35	2/-	0.1
16/-	0.8	11/-	0.55	6/-	0.3	1/-	0.05
15/-	0.75	10/-	0.5	5/-	0.25		
		6d	0.025	3d	0.0125	1d	0.00416

# Paper Calculating Rule

Standard 45/-

De Luxe 70/-

Obtainable only from

**Paper Facts and Figures Limited**

**Elm House, 10-16 Elm Street, London W.C.1**