
**OPERATORS
NOTEBOOK**

**DIPLOMA
COURSE**



SUMLOCK COMPTOMETER LTD

by

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INTRODUCTION

During your course of training on the All British Sumlock Comptometer your aim should be to become an efficient operator, and to this end, you must memorise your decimals, and study your notes regularly.

Accuracy First

Speed Later

Correct posture is essential to comfortable and tireless operating, so from the very first day, see that your chair is adjusted to the correct height, and that both feet rest flat on the floor. The greatest care should be taken of your hands and nails as these attract attention when you are operating.

An efficient operator never puts down her pencil when operating, but holds it between the thumb and palm of the hand, so that it is immediately available to write down answers.

Take care of this book, as it is intended that you should use it not only during your training but as a reference book when you have finished the course.

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Note No. 1

ADDITION

1. When adding you use the large figures on the key-tops. Only one key at a time should be depressed. Slow rhythmical strokes are essential when learning addition. Speed will come naturally with practice.

YOU MUST NOT LOOK AT THE KEYBOARD

2. No figure on the keyboard above 5 is ever used in addition, with the exception of 6 in the pence column in registering 11 pence. (* see below).

3. Above 5 add:—

First 3	then 3	for 6	
" 4	" 3	" 7	
" 4	" 4	" 8	
" 5	" 4	" 9	
" 5	" 5	" 10d.	in the pence column only.
" 6	" 5	" 11d.	in the pence column only.

4. **Correct Fingering**

Shillings and Pence

10/- key	— Operate with first finger of left hand.
Unit shilling keys	— Operate with first finger of right hand.
Pence keys	— Operate with second finger of right hand.

Whole Numbers

Units	— Operate with second finger of right hand.
Tens	— Operate with first finger of right hand.
Hundreds	— Operate with first finger of left hand.
Thousands	— Operate with second finger of left hand.
Tens of Thousands	— Operate with third finger of left hand.

Note

It is often found quicker when adding 6 figures, to add units, tens and hundreds first, and then, thousands, tens of thousands and hundreds of thousands etc., afterwards.

Adding of £. s. d.

When all the £'s items are units the £. s. d. are added straight across, using the following fingering:—

Second finger of left hand	for £'s.
First finger of left hand	for 10/- key.
First finger of right hand	for unit shillings.
Second finger of right hand	for pence.

5. In Cross Casting and Slip-adding the figures are added into the machine in their entirety, commencing with the left hand figure, and using the first two fingers of the right hand only.

Note No. 2

MULTIPLICATION – TWO FACTORS

The large figures on the key-tops and all keys 1 to 9 inclusive and left of the 10/- key, are used for multiplication.

Rule of Multiplication

Hold one factor and depress it the number of times indicated by the other factor.

e.g. 8×4 Hold 8 and depress it 4 times = 32

Working over a fixed decimal point

Place the decimal point in the most suitable position for working. Hold one factor in its correct position over the FIXED POINT, the whole numbers to the left of the decimal point and decimal numbers to the right of it.

When figures are held in their proper or natural positions, this is known as the **UNIT POSITION** and they may be multiplied in this position by **THE UNIT OF THE OTHER FACTOR**.

If the figures held are to be multiplied by tens, hundreds or thousands etc., move one place to the left (from the units position) for tens, two places to the left (from the units position) for hundreds and so on.

If the figures held are to be multiplied by decimal figures move one place to the right (from the units position) when the first figure is in the first decimal place, two places to the right (from the units position) when the first figure is in the second decimal place and so on.

Multiplication of large factors

e.g. 677.45×4983.6

Count the number of whole numbers in both factors and place a decimal pointer that number of places from the extreme left of the machine (including the carry-over register). In the above example the decimal point would be placed seven places from the extreme left of the machine.

Multiplication of decimal numbers

e.g. $.0069 \times .0034$

The decimal point should be placed at the extreme left of the **keyboard**.

AVOID UNNECESSARY WORK

Example 234×978

Note that if 234 is held, multiplying by 978 results in 24 key depressions, whereas if 978 is held only 9 key depressions are made!

COMMON FRACTIONS AND RECURRING DECIMALS

Common Fractions

The decimal equivalent of any common fraction is found by dividing the numerator (top figure) by the denominator (bottom figure).

Example $\frac{7}{16}$ to decimals

Add 7 into the machine and divide by 16

Answer = .4375

Note No. 2

MULTIPLICATION – TWO FACTORS – continued

Recurring Decimals

Work out recurring decimals to as many decimal places as will give the required accuracy.

If the answer is to be given to as many decimal places as possible then it will be necessary to work right off the keyboard.

If the decimal point is well to the left of the keyboard and only a few decimal places are required then you may stop calculating when one more place than the number requested has been completed.

DECIMALISATION

To decimalise pence to shillings

Pence decimals will be found by reference to the Decimal Chart.

Example 45 articles at 3/9d.each

$$45 \times 3.75 = 168.75 \text{ shillings.}$$

Mentally divide shillings by 20 to bring to £'s and shillings = £8. 8. 0d.

Refer to decimal chart for pence = 9d.

Answer £8. 8. 9d.

To decimalise shillings to £1

Halve the number of shillings and decimalise as so many 10ths.

Example 1 1 shilling = $1 \div 2 = .5$ then divide by 10 = .05

Example 2 10 shillings = $10 \div 2 = 5$ then divide by 10 = .5

Example 3 11 shillings = $11 \div 2 = 5.5$ then divide by 10 = .55

To decimalise pence to £1

Refer to the chart headed "Pence as Decimals of £1" and read off the decimals shown against the pence you require.

Example Express 7/6d. as a decimal of £1

$$\begin{aligned} 7/- &= .35 \\ 6d. &= .025 \\ 7/6d. &= .375 \end{aligned}$$

Converting £1's and Decimals to £. s. d.

Whole numbers = £'s

For shillings:—

Double the figure in the first decimal place and if the second decimal place is 5 or more add another shilling.

For pence:—

Mentally subtract the shillings, as decimals, from the figures following the decimal point and convert the remaining decimals to pence by referring to your Decimal Chart.

Example 27 articles at £4. 9. 3d. each

$$= 27 \times 4.4625 = £120.4875$$

$$£'s = 120$$

$$\text{Shillings} = 9 (.45)$$

$$\text{Remaining decimal} = .0375 = 9d.$$

$$\text{Answer} = £120. 9. 9d.$$

**WHOLE PENCE AS DECIMALS OF 1 SHILLING
WHOLE PENCE AS DECIMALS OF £1
MUST BE MEMORISED AS SOON AS POSSIBLE.**

Note No. 4

SUBTRACTION

Both the large and the small figures on the key-tops are used in subtraction.

Example 1 56749 – 235

Add 56749 into the machine at the right hand side of the keyboard using **large** figures.

Use the subtraction selector immediately to the left of the column of the first figure to be subtracted (in this example the hundreds column as we always subtract from left to right).

Using the **small** figures depress 2 in the hundreds column, 3 in the tens column and 4 (5 less 1) in the units column.

Answer 56514

Example 2 56749 – 1230

Use the subtraction selector to the left of the thousands column.

Depress small 122 – ignore the “0” – do **not** depress any key in the unit column.

Answer 55519

Example 3 56749 – 1023

Use the subtraction selector to the left of the thousands column and depress small 1022.

Answer 55726

Example 4 56749 – 695

Use the subtraction selector to the left of the hundreds column and depress small 6 – 4.

Answer 56054

Example 5 56749 – 874

On all manual Sumlock Comptometers and on some electric models it will be necessary to “borrow” just as when working mentally. To borrow you depress small “0” in the column immediately to the left of that from which the first figure is to be deducted.

In Example 5 use the subtraction selector to the left of the thousands column and depress small 0873.

Answer 55875

Decimal Subtraction

The principle remains the same, but care must be taken to see that the amounts are correctly entered around the decimal point.

Subtraction of £. s. d.

The principle remains the same with the exception of the 10/- key.

When subtracting an amount containing 10/- such as £13. 17s. 10d. omit depressing the 10/- key, as there is no small 1 in this column.

When subtracting an amount with **NO** 10/- amount such as £13. 7. 10d. depress the 10/- key as there **IS** a small “0” in this column; although no “0” is written, it is nevertheless understood.

Rule for Deducting 1d. and 2d.

When deducting 1d. and 2d. from an amount the following rules apply, because there are no 10d. or 11d. keys.

When subtracting 2d. – depress **LARGE** 5d. twice.

When subtracting 1d. – depress **LARGE** 6d. and **LARGE** 5d. once.

NOTE

Always remember when subtracting, to add back to prove.

Note No. 5

DIVISION

Add the DIVIDEND into the machine at the left hand side on LARGE figures, placing the decimal point in its correct position.

Point-off according to the DIVISOR, before commencing to divide.

Rules for Pointing-Off

1. For each whole number in the divisor, move the decimal point one place to the LEFT.
2. If the divisor is a decimal such as .345, the decimal point is **not** moved from its original position.
3. If the divisor is a decimal with preceding ciphers such as .0024, the decimal point is moved one place to the RIGHT for each cipher.

HOLD THE DIVISOR ON THE SMALL FIGURES LESS ONE ON THE LAST FIGURE OF VALUE

Rules for working

1. Catch up index figure.
2. Reduce the remainder.
3. Move over one place to right and continue according to rules 1 and 2.

The INDEX FIGURE is the first figure in the answer register, immediately to the **left** of the columns on which the divisor is being held.

Rules for "0's"

1. When "0's" occur in the body of a divisor, small "0" must be held.
2. When "0" occurs at the end of a divisor, ignore and less one from last figure of value.
3. When "0's" occur at the beginning of a divisor, they are ignored once the pointing-off rule has been carried out.

Rules for 9's

1. When 9's occur in the body of a divisor, do not hold any keys in that particular column or columns.
2. When 9 occurs at the end of a divisor, less one and hold small 8.
3. When the first figure of a divisor is a 9 it cannot be held but it must be remembered that it is part of the divisor – therefore the **index** figure becomes the figure appearing **TWO** places to the left of the columns on which the divisor is being held. When the first **two** figures of a divisor are 9's the index figure becomes the figure appearing **three** places to the left of the columns on which the divisor is being held and so on.

The Remainder Method of Division

To divide by the remainder method is to work with the object of showing a unit remainder, instead of producing a decimal.

It is chiefly used when converting:—

Lb. to cwts. qrs. and lb.

Lb. to tons cwts. qrs. lb.

Pence to shillings.

Pence to £. s. d.

Singles to gross, dozens and singles.

Oz. to lb. and ozs.

Seconds to Hours and Minutes.

(Remainder method of division may only be used when division can be made the last operation).

Note No. 5

DIVISION – continued

Long Division

Long Division is used when the figures of the divisor are too many in number or too awkwardly placed to hold in one operation. In these instances it is necessary to split the divisor.

Hold the first half of the divisor and proceed with rules 1 and 2 of the normal division routine. Before moving over for rule 3 pick up the remaining divisor figures in their correct position and depress the number of times that the first half was depressed.

Move one place to the right with the first half of the divisor, and the same operation is repeated.

This routine is continued until the division has been completed.

Note No. 6

MULTIPLICATION OVER – THREE OR MORE FACTORS

SIMPLE OR DIRECT MULTIPLICATION is multiplication of two factors only but in MULTIPLICATION OVER, which is multiplication of three or more factors **without clearing the machine**, the method is to move the decimal point instead.

Memorise the following rules for pointing-off

When a factor (a set of figures) is in the machine, it is in the natural position, or **UNITS** position and is considered to be multiplied by 1.

To 'multiply-over' by, say, 5, pick up the figures in the machine and depress the keys four more times; call the first stroke "2", then continue with 3, 4 and 5. The first stroke (or multiplication by one) has already been made as the figures were in the machine once.

When multiplying-over by a number, the first figure of which is not a UNIT the position of the decimal point can be altered according to the following rules:—

1. 24.26 the **DECIMAL POINT** is moved one place to the **RIGHT** and the keys are depressed 1426 times
2. 324.26 " " " is moved two places to the **RIGHT** and the keys are depressed 22426 times
3. 5324.26 " " " is moved three places to the **RIGHT** and the keys are depressed 432426 times
4. .4 " " " is moved one place to the **LEFT** and the keys are depressed 3 times
5. .04 " " " is moved two places to the **LEFT** and the keys are depressed 3 times
6. .004876 " " " is moved three places to the **LEFT** and the keys are depressed 3876 times

From the last example it will be seen that the decimal point is moved for the point (.) and the number of 0's and **not** for the number of figures after the decimal point.

REMEMBER in Multiplication-over you move the **decimal point only**:
you do **not** move your hands as well.

Note No. 7

ACCUMULATION OF PRODUCTS

To accumulate is to allow one product to add to another in the machine and would be used when only the final figure is required in a series of multiplications.

Work over a fixed point but allow a sufficient number of columns to the left of the decimal point for whole numbers in order to have plenty of machine space for the "carry-over" figures.

Accumulation – when using a Sumlock Comptometer with only one Register – can only be applied to direct multiplication and **not** multiplication-over unless the multiplication-over factor is common to all items. Neither can it be applied to mixed quantities and weights such as:–

343 lb.	@ £1. 2. 6d.per cwt.
591 sins.	@ £2. 13. 9d.per gross
45 oz.	@ 11. 6d.per lb.

unless a Storage Register model is available.

Note No. 8

DISCOUNTS AND INCREMENTS

Discounts and Increments are always quoted per cent (%) – per 100.
When calculating Discounts or Increments first mentally divide the % figure by 100.

Example $25\% = \frac{25}{100} = .25$ $5\% = \frac{5}{100} = .05$

Discount and Net Amount

Discount

Example £48.10.0d. less 25% = $48.5 \times .25 = £12.2.6d.$

Net Amount

Example £48.10.0d. less 25%

Net Percentage = $75\% = 48.5 \times .75 = £36.7.6d.$

Increment and Gross Amount

Increment

Example £246.15.0d. plus 5% = $246.75 \times .05 = £12.6.9d.$

Gross Amount

Example £246.15.0d. plus 5%

Gross Percentage = $105\% = 246.75 \times 1.05 = £259.1.9d.$

Note No. 9

CHAIN DISCOUNTS AND INCREMENTS

When there is more than one percentage to be added or deducted this is termed Chain Discount.

Normally only the final answer is required, which means only the NET AMOUNT or GROSS AMOUNT. Always work the chain of discounts or increments first then multiply by the money.

Example 1 £35. 0. 0d. less 5%, less 15%, less 2½%
 .95 x .85 x .975 = .7873125
 .7873125 x £35 = £27. 11. 1d.

Example 2 £35. 0. 0d. plus 5%, plus 15%, plus 2½%
 1.05 x 1.15 x 1.025 = 1.2376875
 1.2376875 x £35 = £43. 6. 5d.

Example 3 £35. 0. 0d. less 5%, plus 15%, less 2½%
 .95 x 1.15 x .975 = 1.0651875
 1.0651875 x £35 = £37. 5. 8d.

NOTE: When the same chains occur repeatedly work these out first and keep a note of them.

NOTE: When 'and' occurs in a chain discount or increment it indicates that the sign immediately preceding is to be repeated e.g. less 2½% and 5% means less 2½%, less 5%.

To Find Actual Amount of Discount

Multiply the Net Percentages together and deduct the result from 1.

Example £135. 10. 6d. less 10%, less 2½%
 .9 x .975 = .8775
 1 - .8775 = .1225
 £135.525 x .1225 = £16. 12. 0d. = **Actual Amount of Discount**

To Find Actual Amount of Increment

Multiply the Gross Percentages together and deduct 1 from the result.

Example £135. 10. 6d. plus 10%, plus 2½%
 1.1 x 1.025 = 1.1275
 1.1275 - 1 = .1275
 £135.525 x .1275 = £17. 5. 7d. = **Actual Amount of Increment**

Note No. 10

RECIPROCAL

A reciprocal is the result of dividing any number into 1. It would be used to find the result of a division by simple multiplication, since the process of multiplication by Comptometer is usually quicker than that of division. Reciprocal division is mostly used when several amounts have to be divided by the same number.

Example £ 10. 9. 6)
 501.11. 7)
 2.19. 8) All to be divided by 33.5
 1065. 4.11)
 31. 1. 8)

The reciprocal of 33.5 is .0298507443. Multiply each item in turn by this decimal number.

Reciprocals can also be used for a single division if the divisor is one which can be used fairly frequently and can be committed to memory.

Example 349 oz. @ 18/9d.per lb. = 349 x .9375
 Leave result in the machine and multiply by .0625 (Reciprocal of 16).

RECIPROCAL MUST ALWAYS BE PROVED ACCURATE BEFORE THEY ARE USED.
CHECK BY MULTIPLYING BACK.

Note No. 11

MISCELLANEOUS EXTENSIONS

An 'Extension' is the type of calculation involving a given number of articles at a given price, weight or measurement, to arrive at a total price, weight or measurement.

When extending bring the quantity to the same unit as the price 'per'.

The following notes give instructions for calculating various types of extensions using reciprocals to build up decimals. There are also decimal charts covering each of the following groups of extensions which can be used instead of reciprocals.

Lb. Oz.

Lb. oz. @ price per lb.

Multiply lb. and oz. — as 16th — by price per lb.

NOTE When oz. have fractions e.g. 3lb. 15¼oz. @ 3/9d.per lb.
add lb. into Register multiplying oz. by .0625, multiply by price.

Lb. oz. @ price per oz.

Convert lb. to ozs. by multiplying by 16, add in the odd ozs. multiply by price.

Yardage

Yards, Feet and Inches

12 inches = 1 foot.

3 feet = 1 yard.

36 inches = 1 yard. Reciprocal of 36 = .027

Yards and Inches @ price per yard

Add yards into Register multiply inches by .027, multiply by price.

Yards and Feet @ price per yard

Multiply yards and feet — 1 foot as .3 or 2 feet as .6 — by price.

Yards, Feet and Inches @ price per yard

Add yards as whole numbers, add each foot as .3, multiply inches by .027, multiply by price.

Liquid Measure

4 gills = 1 pint.

2 pints = 1 quart.

4 quarts = 1 gallon.

8 pints = 1 gallon.

Gallons, Quarts and Pints at price per gallon

Treat gallons as whole numbers, mentally multiply quarts by 2, add pints and decimalise as 8ths, multiply by price.

MISCELLANEOUS EXTENSIONS—Continued

Gallons, Quarts and Pints at price per quart

Convert gallons to quarts by multiplying by 4, add in quarts and decimalise any pints as halves, multiply by price.

Gallons, Quarts and Pints at price per pint

Convert gallons to pints by multiplying by 8, leave result in machine, multiply quarts by 2 and add in pints as whole numbers, multiply by price.

Gross

12 singles = 1 dozen
 12 dozen = 1 gross
 144 singles = 1 gross reciprocal = .00694

Gross, Dozen and Singles at price per gross

Add gross as whole numbers, add dozens as 12ths (decimalised as pence to 1/-). Multiply singles by .00694 multiply by price.

Gross, Dozen and Singles at price per dozen

Convert to dozens by multiplying by 12, add in the dozens as whole numbers and decimalise the singles as 12ths (same as pence to 1/-), multiply by price.

Gross, Dozen and Singles at price per single

Convert gross to singles by multiplying by 144 and then dozens to singles by multiplying by 12. Add in the singles, multiply by price.

Price Basis Equivalent

1d. each = 1/- per dozen and vice versa.
 1/- per cwt. = £1 per ton and vice versa.
 1/- per quire = £1 per ream and vice versa.

Short cuts such as the above examples will often save considerable time when extending.

Tonnage Extensions

Tons, cwts. qrs. and lb. @ price per ton

The TONS will be whole numbers.
 CWTS. will be decimalised as shillings to £1. (ex. 6/- = .3
 ∴ 6 cwts. = .3)
 QRS. will be 1 qr. = .0125
 2 qrs. = .025
 3 qrs. = .0375

Lb. are multiplied by the reciprocal of 2240 (.000446428)
 All to be multiplied over by the price.

Example 5 tons 18 cwts. 2 qrs. 15 lb. @ £2. 10s. 0d. per ton.

Add the tons as whole numbers (5) and cwts. as .9 = 5.9
 2 qrs. = .025 = 5.925
 Multiply the 15 lb. by .000446428 = 5.93169638

Multiply by the price
 Answer = £14. 16s. 7d.

MISCELLANEOUS EXTENSIONS—Continued

Tons, cwts. qrs. and lb. @ price per cwt.

Example 2 tons 5 cwts. 3 qrs. 11 lb. @ 16/9d. per cwt.

Multiply	2 (tons) by 20 and add in the 5 cwts.	= 45
	3 qrs. = .75	= 45.75
	11 lb. x .008928571 (reciprocal of 112)	= 45.8482142

Multiply by the price

Answer = £38. 7s. 11d.

Tons, cwts. qrs. and lb. @ price per lb.

Convert tons, cwts. and qrs. to lb. add in odd lb. and multiply by price per lb.

Lb. @ price per cwt.

Multiply lb. by price and divide by 112.

Lb. @ price per ton

Multiply lb. by price and divide by 2240.

Work Priced Per Hundred and Thousand

(C or %) is an abbreviation for price per hundred.

(M or ‰ or mille) is an abbreviation for price per thousand.

Mentally divide quantity by 100 or 1,000 before commencing the calculation.

i.e. two places to left to divide by 100.
three places to left to divide by 1,000.

Then make a simple multiplication, quantity by rate.

NOTE Weights are sometimes priced per C or ¢ meaning price per cwt.

Metric Conversions

e.g. Kilos @ price per lb.
Metres @ price per yard, etc.

Multiply weight or measure by price; multiply by appropriate decimal from Metric Conversion Table.

Note No. 12

WAGES

Hours and minutes @ rate per hour

Add hours into Register, multiply minutes by .016̇ (or use decimal chart).

Multiply by price

If minutes are taken to the nearest five minutes, mentally divide them by 5 and treat as 12ths.

e.g. 7 hrs.40 mins. = $7\frac{8}{12}$ = 7.6̇

Multiply by price

Hours at Rate per Hour plus Overtime

Calculate the number of hours by adding the flat number of hours into the machine and accumulate the overtime by multiplying the hours at time and a quarter by 1.25; the hours at time and a half by 1.5; the hours at double time by 2.

Multiply by rate per hour

If the rate is given in pence and decimals of a 1d. multiply by pence and decimals, then divide by 12 remainder method.

Payroll

This could involve any or all of the following:

- 1) Add daily hours for each employee to give total hours.
- 2) Extend hours by rate to give gross wage.
- 3) Cross cost deductions column to give a total deductions figure.
- 4) Subtract total deductions from Gross wage to give Net wage.
- 5) Add Gross wage, Total Deductions and Net wage to balance.
- 6) Coin denomination.

Coin Denominating

Example	Result
£ s. d.	Amounts under the various denominations:—
12.18. 3	£ s. d.
13.14.10	£1 notes 109. 0. 0
18. 1. 5	10/- notes 1.10. 0
16. 0. 9	Silver 1.18. 0
15.19. 1	Threepenny bits 1. 6
18. 2. 9	Coppers 7
8. 7. 4	<u>£112.10. 1d.</u>
9. 5. 8	
<u>£112.10. 1d</u>	

Each item in the above column is the wage to be paid to a certain worker. The cashier must therefore draw from the Bank enough £1 notes, enough 10s. notes and as much silver and copper as will enable him to give each worker the exact money. To find the necessary amounts under each denomination, work as follows:—

1. Add the £'s only and note answer.
2. Add the 10/-'s and note answer.
3. Add the silver (shillings and sixpences) on the shillings and pence keys and note answer.
4. From the pence column, add into machine all whole 3d.'s (remembering that the 6d.'s have already been deducted) and note answer.
5. Add pence on pence keys and note answer.

The total of the various amounts must agree with the total of the Wages column.

NOTE: You may be required to list £5 notes and £10 notes; also to reduce silver into terms of large (2/- pieces and 2/6d.pieces) and small (6d.pieces).

FOREIGN EXCHANGE

Foreign Exchange conversions involve expressing one country's currency in terms of another.

The term 'Rate of Exchange' means the value of one country's currency, expressed in terms of another country's currency.

When converting foreign currencies, it is for the operator to decide by applying common sense, whether the calculation is one of **Multiplication** or **Division**.

NOTE: One point to remember is that if the amount to be converted and the rate of exchange are the same currency you **DIVIDE**. If they differ you **MULTIPLY**.

Example

1. \$384.56 to £'s @ \$2.39

As there are 2.39 dollars to £1. there will be fewer £'s than there are dollars, therefore **DIVIDE** $\$384.56 \div \2.39
Answer = £160. 18. 1d.

2. £368.10.6d. to Francs @ 11.86½

As there are 11.86½ Francs to £1. there will be more Francs than £'s therefore **MULTIPLY** 368.525×11.865 .
Answer = 4372.55 Francs

Method of Finding Rate of Exchange

Example £150. 10. 6d. = 2683.85 Kroner; find rate of exchange.

DIVIDE the £'s into the foreign currency and the result will be the number of Kroner to the £ Sterling.

Answer = 17.83 Kroner

TONNAGE ADDITION AND SUBTRACTION

TARE

Addition of Tons cwts.qrs.lb.

Add lb. at left hand side of machine in columns 2 and 3. Divide by 28 remainder method to reduce to qrs. and lb. Mentally convert the qrs. to shillings and pence (i.e. 15 qrs. = 1/3d). Hold this figure on the shillings and pence columns and multiply by 3.

Add cwts. and qrs. together, as shillings and three pences.

Add tons in £'s columns.

When reading answer back treat,

£'s as tons

Shillings as cwts.

Divide the pence figure by 3 to give qrs.

Read lb. from left-hand side of machine.

Addition of cwts. qrs. lb.

Add lb. on units and tens (of £'s) columns.

Divide by 28 remainder method = qrs. lb.

Add qrs. on qrs. and divide by 4 remainder method = cwts. qrs. lb.

Add cwts. on cwts.

Subtraction of Tons, cwts. qrs. lb.

Example	52 tons	14 cwts.	3 qrs.	19 lb.
	- 41 tons	2 cwts.	1 qr.	14 lb.

Add 52 tons, 14 cwts. 3 qrs. as £52.14.9d. (i.e. call each qr. 3d) and lb. at left-hand side of machine.

Subtract lb. from lb.

Subtract tons, cwts. qrs. as though subtracting £.s.d.

Answer £11.12.6d. = 11 tons, 12 cwts. 2 qrs. and 5 lb.

NOTE: If the number of lb. to be subtracted is larger than the number of lb. in the machine, you will have to 'borrow' 28 lb. from the qrs. remembering to mentally 'pay back' before continuing with the subtraction.

TARE

Tare is an allowance given to cover such things as weight of packing or wrapping, loss of weight in cargoes due to evaporation, i.e. bales of wool etc.

The weight of tare is shown either as a total figure for the goods in question, i.e. 1 cwt. 2 qrs. 5 lb. Tare 25 lb. or as an allowance per box, sack, bale, etc. i.e. 20 boxes each weighing 52 lb. Tare 1½ lb. per box.

The calculation involves deducting the total allowance of Tare and multiplying by the price.

PERCENTAGE CALCULATIONS

To Find a percentage of an amount

Divide the percentage figure by 100 then multiply by the given amount.

Example What is 25% of £136.10.0d.
 $25 \div 100 = .25$
 $.25 \times £136.5 = £34.2.6d.$

To find what per cent one amount is of another

Add the amount following **IS** into the machine
 Multiply by 100
 Divide by the amount following **OF**.
 The answer will be expressed as so much per cent.

Example What % is 254 of 397.
 $254 \times 100 \div 397 = 63.98 = 63.98\%$

NOTE: The **IS** and **OF** amounts must be of the same denomination.

Example What % is 52 lb. of 3 cwt. 1 qr. 15 lb.

It will therefore be necessary either to convert the 52 lb. to a decimal of 1 cwt. or to reduce the 3 cwt. 1 qr. 15 lb. to lb.

Proportioning Percentages

Example

£	
368	
2865	Find what percentage each item is to the total;
435	show each percentage correct to two decimal places.
210	
582	

Total the amounts and check the addition = £4460.

Each item has now to be multiplied by 100, and divided by 4460.

You can, however, short cut this process by finding a 'constant'.

The constant is found by dividing the total into 100; check it by multiplying back. Multiply each item by the constant and read the answers correct to two places of decimals. The total of these answers must equal 100%.

$$100 \div 4460 = .022421524$$

$$(.022421524 \times 4460 = 99.999\dots)$$

368 x	.022421524	=	8.25
2865 x	"	=	64.24
435 x	"	=	9.75
210 x	"	=	4.71
582 x	"	=	13.05
			100%

Percentage of Increase or Decrease

Always add the later dated amount into the machine and find its percentage of the earlier dated amount.

If the answer is MORE THAN 100% subtract 100 and the answer will be a percentage of INCREASE.

If the answer is LESS THAN 100% subtract it from 100 and the answer will be a percentage of DECREASE.

If you have to show both amount and percentage of Increase or Decrease:

Subtract the smaller amount from the larger amount to give actual amount of increase or decrease and divide by the **earlier** dated amount to give percentage.

Note No. 16

PRO-RATING

To Pro-rate means to spread one amount over other amounts in proportion to their size.

The method of working is similar to that of proportioning percentages.

Example Pro-rate £59.7.6d. over the following items:

£	s	d
29.	7.	6
32.15.		0
47.16.		9
84.14.		3
63.17.		0

Total the amounts and check the addition = £258.10.6d.

Each item has now to be multiplied by £59.7.6d. and divided by £258.10.6d.

This process can be short cut in a similar manner to that used when calculating Proportioning Percentages.

Divide £59.7.6d. by £258.10.6d. to find the constant and check it by multiplying back.

Multiply each item by the constant. When you have finished these multiplications add them up to ensure that the total equals the amount to be pro-rated i.e. £59.7.6d.

59.375	÷	258.525	=	.22966831
(.22966831	×	258.525	=	£59.7.6d.)
29.375	×	.22966831	=	£ 6.14.11
32.75	×	"	=	7.10. 5
47.8375	×	"	=	10.19. 9
84.7125	×	"	=	19. 9. 1
63.85	×	"	=	14.13. 4
				<u>£59. 7. 6d.</u>

Note No. 18

CUBIC MEASURE

Multiply the three given measurements together and express the answer in cubic feet and inches (twelfths). Reduce to cubic yards to the nearest cubic yard by dividing by 27.

Example 25.0
 15.9
 7.2 @ 18/6d.per cubic yard

$$\begin{aligned} 25 \times 15.75 \times 7.1\hat{6} &= 2821.875 = 2821.11 \text{ cubic ft.} \\ \div 27 &= 104.513\hat{8} = 105 \text{ cubic yds.} \\ 105 \times .925 &= \text{£}97.2.6\text{d.} \end{aligned}$$

/ (meaning multiply) and . (meaning add)
apply to cubic measure in exactly the same way as they do for square measure.

Note No. 19

STEEL CALCULATIONS

Example Show total weight in lb. also tons, cwts. qr. lb.

6 Pieces each 4'6" 1 Foot = 14.73 lb.
5 Pieces each 3'4½"
8 Pieces each 6'1½"
12 Pieces each 2'8"

Multiply number of pieces by length and then by weight per foot = total weight in lb. = 1839.41 lb.

Reduce to tons, cwt, qr. lb. = 16 cwt. 1 qr. 19.41 lb.

Weight and price per sq. ft.

Multiply the two given measurements together, by the weight in lb. per sq. ft; reduce to tons, cwt. qr. lb. Multiply by the price.

Weight and price per cub. ft.

Multiply the three given measurements together, over by the weight in lb. per cub. ft; reduce to tons, cwts. qr. lb. Multiply by the price.

Note No. 20

SHIPPING

1 space or measurement ton = 40 cubic feet
1 metric ton = 1000 Kilos
1 bushel = 80 lb.

Example

4 Packages 3' x 2' x 1'6" @ £26.10.0d. per space ton: Primage 5%
= $4 \times 3 \times 2 \times 1.5 \times 26.5 \div 40 = 23.17. 0$
+ 5% 1. 3.10
£25. 0.10

Example

12750 Kilos @ 145/- per metric ton
= $12.75 \times 7.25 = £92.8.9$

Example

8750 lb. @ 204/9d. per bushel
= $8750 \times 10.2375 \div 80 = £1119.14.6$

PAPER TRADE CALCULATIONS

A ream of paper usually contains 480 sheets or 500 sheets and is sub-divided in the following way.

480 Sheets

24 sheets = 1 quire
20 quires = 1 ream

500 Sheets

25 sheets = 1 quire
20 quires = 1 ream

Decimalise:

Quires to a ream as shillings to £1.

Sheets to a ream (480) by halving and treating as pence to £1.

i.e. $18 \text{ sheets} = \frac{9}{240} = .0375$.

Sheets to a ream (500) by multiplying sheets by .002.

Example 11 reams 17 quires 18 sheets @ 35/6 per ream (480's)
= $11.8875 \times 1.775 = \text{£}21. 2. 0d$.

Example 7 reams 10 quires 8 sheets @ 28/6 per ream (500's)
= $8 \times .002$
Add $7.5 = 7.516 \times 1.425 = \text{£}10. 14. 2d$.

Example 95 reams 243 sheets @ 36/- per ream (480's)
= $243 \times .00208\bar{3}$
Add $95 = 95.50625 \times 1.8 = \text{£}171. 18. 3d$.

NOTE If 500 sheets per ream multiply number of sheets by .002.

Price per Quire

Follow the method of calculation for price per ream then multiply by 20.

Price per Sheet

Multiply reams and quires (decimalised as 20ths) by the **number of sheets per ream**, add odd sheets and multiply by the price.

Price per lb.

Multiply reams and quires (decimalised as 20ths) by lb. per ream, multiply by the price.

Price per 1000 sheets

Bring to sheets, multiply by price, divide by 1000.

Note No. 22

GLASS

Glass is sold by the super foot (square foot).

When measurements are shown with fractions of inches i.e. $45\frac{1}{8}$ " these are normally taken to the next inch—46—before squaring.

Example 16 panes glass $22\frac{1}{2}$ " x $14\frac{1}{8}$ " @ 7/6d.per super foot. Area to be shown in square feet and 1 decimal place and the value calculated on this basis.

$$= 16 \times 23 \times 15 \div 144 = 38.3 \text{ sup.ft.}$$
$$38.3 \times .375 = \text{£}14.7.3\text{d.}$$

Example 34 panes glass $18\frac{3}{8}$ " x $26\frac{1}{4}$ " @ 9/3d.per super foot. Area to be shown in square feet and inches (twelfths) and the value calculated on this basis.

$$= 34 \times 19 \times 27 \div 144 = 121' 2''$$
$$121.1\dot{6} \times .4625 = \text{£}56.0.10\text{d.}$$

Circular Glass

Circular glass is cut from a square and in order to find the size required 1 inch is always added to the diameter, e.g. Diameter 14" – take up to 15" before squaring.

If the diameter is shown in inches and fractions, i.e. $15\frac{1}{8}$ " take up to the next whole inch, then add 1 inch.

$$15\frac{1}{8}" = 16" + 1" = 17"$$

Bevelling

A pane of glass has four sides, or edges, two of length and two of breadth. To find the total foot run double the length measurement and add it to double the breadth measurement.

Example 17 panes glass each 26" x 14". Find the cost of bevelling at 2/6d.per foot run.

$$= (26 \times 2) + (14 \times 2) = 80$$
$$80 \times 17 \div 12 = 113.3 \text{ foot run}$$
$$113.3 \times .125 = \text{£}14.3.3\text{d.}$$

NOTE In the above example the length was shown in foot run and one decimal place. If the answer were required in feet and inches it would be 113' 4".

TIMBER CALCULATIONS

In the following examples, all answers in square feet, cubic feet, standards, have been taken to three decimal places. The cost is then calculated on this basis.

Squaring

Example $11' 8'' \times 1' 2\frac{1}{2}'' @ 18/9d.$ per sq. ft.
 $= 11.6 \times 1.208\bar{3} = 14.097$ sq. ft.
 $14.097 \times .9375 = \text{£}13.4.4d.$

Cubing

Example 8 pieces each $8' 6'' \times 2' 3'' \times 9\frac{1}{2}'' @ 25/-$ per cub. ft.
 $= 8 \times 8.5 \times 2.25 \times .791\bar{6} = 121.125$ cub. ft.
 $121.125 \times 1.25 = \text{£}151. 8. 2d.$

Price per Square (meaning 100 sq. ft.)

Example 52 pieces each $18' 9'' \times 4' 3'' @ 117/6d.$ per square.
 $= 52 \times 18.75 \times 4.25 \div 100 = 41.438$ squares.
 $41.438 \times 5.875 = \text{£}243.9.0d.$

Price per Standard (165 cubic feet)

Example 1 62 pieces each $15' 6'' \times 8'' \times 3\frac{1}{2}'' @ \text{£}104.15.0d.$ per standard.
 $= 62 \times 15.5 \times .6 \times .291\bar{6} \div 165 = 1.132$ stds.
 $1.132 \times 104.75 = \text{£}118.11.6d.$

Example 2 Show total number of pieces, total running feet, standards to three decimal places and total cost to nearest penny.

58 pieces	29')	
125 "	28')	
150 "	26')	2" x 4½" @ £98.12.6d. per standard
.16 "	25')	
40 "	22')	

Add number of pieces = 389 pieces
 Accumulate number of pieces by their length = 10362 run. ft.
 Calculate standard quantity, multiply by price.

$10362 \times .16 \times .375 \div 165 = 3.925$ stds.
 $3.925 \times 98.625 = \text{£}387. 2. 1d.$

NOTE A standard of timber is equal to 165 cubic feet.
 It can also be expressed as:
 23760 lineal feet of 1" x 1"
 or
 1980 board feet of 1' x 1"

In Example 2 if you were finding standard quantity from lineal feet multiply the foot run by inches of width and inches of depth **IN WHOLE NUMBERS** then divide by 23760.

i.e. $10362 \times 2 \times 4.5 \div 23760 = 3.925$ standards.

To find standard quantity from board feet multiply foot run by inches of width **as a decimal of 1 foot** by inches of depth in whole numbers then divide by 1980.

i.e. $10362 \times .16 \times 4.5 \div 1980 = 3.925$ standards.

You will see that the two alternative methods still give the same number of standards.

TIMBER CALCULATIONS—Continued

Hardboard

Calculations involving hardboard are usually taken to two decimal places and the cost is calculated on this basis.

Example 1 15 sheets hardboard 100'' x 50'' x $\frac{3}{16}$ '' @ 2/3d.per sq. ft.

$$= 15 \times 8.3 \times 4.16 = 520.83 \text{ sq. ft.}$$

$$520.83 \times .1125 = \text{£}58. 11. 10\text{d.}$$

Example 2 9 sheets hardboard 78'' x 50'' x $\frac{1}{8}$ '' @ 9/6d.per sq. yd.

$$= 9 \times 6.5 \times 4.16 \div 9 = 27.08 \text{ sq. yds.}$$

$$27.08 \times .475 = \text{£}12. 17. 3\text{d.}$$

NOTE If fractions of inches are shown i.e. $33\frac{1}{8}$ '' they are normally taken up to the next whole inch, i.e. 34''.

PENCE FRACTIONS AND DECIMALS

Example 1 $93 @ 8\frac{3}{16}d.$ each = $93 \times 8.1875 \div 240 = \text{£}3.3.5d.$

Example 2 $186 @ 2\frac{1}{3}.188d.$ each = $186 \times 27.188 \div 240 = \text{£}21.1.5d.$

Example 3 $1275 @ \text{£}4.16.8.73d.$ each

Add £'s and shillings as decimals of £1 into the machine at the left hand side = 4.8

Multiply pence and decimals by $.0041\bar{6} = 4.836375$

Multiply by 1275 = £6166. 7. 7d.

PRICE AVERAGING

Two examples of this type of calculation are given below.

Example 1 2 tons 11 cwt. 2 qr. 7 lb. cost £77. 14. 9d. Find the average cost per lb. to 3 decimal places of a penny.

$$\begin{aligned} \text{Reduce weight to lb.} &= 5775 \text{ lb.} \\ \text{Reduce cost to pence} &= 18657\text{d.} \\ 18657 \div 5775 &= 3.231\text{d. per lb.} \end{aligned}$$

Example 2 18½ gross @ 35/- per gross
9¼ gross @ 42/- per gross
22 gross @ 54/- per gross

Give the total cost to the nearest penny also the average price per single to three decimal places of a penny.

$$\begin{aligned} \text{Add gross and multiply by 144} &= 7236 \text{ singles} \\ \text{Accumulate extensions} &= \text{£}112. 5. 0\text{d.} \\ \text{Multiply by 240 and divide by} & \\ 7236 &= 3.723\text{d.} \end{aligned}$$

Therefore, total cost is £112. 5. 0d.
Average price per single is 3.723d.

COST AND SELLING

Example 1 Cost Price £125. 10. 6d. At what price must we sell to make 32½% Profit on the Selling Price.

Selling Price = 100%
Profit = 32½%
Cost Price = 67½%

∴ $125.525 \div .675 = £185.19.3d.$ = Selling Price.

Example 2 Cost Price £79. At what price must we sell to make 25% Profit on the Cost Price.

Cost Price = 100%
Profit = 25%
Selling Price = 125%

∴ $79 \times 1.25 = £98. 15. 0d.$ = Selling Price.

Example 3 Cost Price £1. 5. 3d. Overhead 12½% Profit required 27%. Find the Selling Price assuming it to be 100%. Percentage of overheads is added to percentage of Profit.

= 12.5% + 27% = 39.5%

$1.2625 \div .605 = £2. 1. 9d.$

Mark Down

Example Usual selling Price of an article is £26. 5. 0d. Find the Sale Price if it has been "marked down" by 12½%.

$26.25 \times .875 = £22. 19. 5d.$

Note No. 27

PROFIT AND LOSS

Example 1 Cost Price 95/-. Selling Price 110/-. Find the percentage of Profit.

$$= \frac{110 - 95}{95} \times 100 = 15.79\%$$

The percentage of profit equals 15.79 subtracted from 100 = 84.21% Profit.

Example 2 Cost Price 83/-. Selling Price 72/6d. Find the percentage of Loss.

$$= \frac{83 - 72}{83} \times 100 = 13.25\%$$

Subtract 100 = 86.75% Loss.

NOTE The percentage of Profit or Loss can also be calculated by subtracting the smaller amount from the larger amount and expressing it as a percentage of the Selling Price; whether Profit or Loss must be determined by inspection.

Expenses or Overheads are always added to the Cost Price.

e.g. Cost Price £4. 15. 0d.
Selling Price 12. 0. 0d.
Overheads 3. 10. 0d.

means that the total cost is really £8. 5. 0d.

Note No. 28

SIMPLE INTEREST

Interest is money paid, for the loan of money lent for a certain time at a rate per cent per annum. The money lent and on which the interest is reckoned is called the Principal. "Simple" Interest is calculated on Principal (or Capital) only.

Example 1 Find the Simple Interest on £135. 10. 6d. for
3½ years @ 4½% per annum.

$$= 135.525 \times 3.5 \times .045 = \text{£}21. 6. 11 \text{d.}$$

Example 2 Calculate Simple Interest on £244. 11. 0d. for
27 days @ 6½% per annum.

$$= 244.55 \times 27 \times .065 \div 365 = \text{£}1.3.6 \text{d.}$$

Example 3 Simple Interest on £410. 11. 8d. from 16. 10. 66 to 8. 3. 68 @ 4¼% per annum.

$$8. 3. 68 - 16. 10. 66 \text{ (using decimal chart) } = 1.391781$$

$$1.391781 \times 410.58\dot{3} \times .0475 = \text{£}27. 2. 10 \text{d.}$$

COMPOUND INTEREST

Interest is 'Compound' when its value is added to the Principal (or Capital) each year instead of being withdrawn. Thus £100 invested at 5% C.I. will be worth £105 at the end of the first year. The interest for the second year is calculated on £105 which becomes £110.50d. at the end of that year. The interest for the third year is calculated on £110.50d. which becomes £116.06d. And so on.

Example Find the amount that £300 will become after 4 years investment at 5% per annum.

£1 for 1 year at 5% = 1.05

£1 for 2 years at 5% = 1.05 x 1.05 = 1.1025

£1 for 3 years at 5% = 1.05 x 1.05 x 1.05 = 1.157625

£1 for 4 years at 5% = 1.05 x 1.05 x 1.05 x 1.05 = 1.21550625

Therefore £300 will become $300 \times 1.21550625 = £364.13.0d.$

NOTE If you are asked to show the Actual Interest deduct the amount of Principal when the calculation is completed, i.e. £364.13.0d.— £300 = £64.13.0d.

The process of finding what £1 will become in a number of years at the given rate per cent can be short cut as follows.

To find what £1 will become after 4 years at 5% multiply the figure obtained for 2 years by itself, thus $1.1025 \times 1.1025 = 1.21550625$.

For 6 years multiply 4 years by 2 years ($1.21550625 \times 1.1025 = 1.34009564$)

For 8 years multiply 4 years by 4 years ($1.21550625 \times 1.21550625 = 1.47745543$)

For 12 years multiply 8 years by 4 years

and so on.

Note No. 30

INSURANCE

Example 1 £6425 @ 4/6%—5%—10%

As the rate is % divide 6425 by 100 = 64.25

$64.25 \times .225 \times .95 \times .9 = \text{£}12. 7. 2\text{d.}$

NOTE If the rate reads ‰ this means, per 1000 so divide the amount insured by 1000 before commencing the calculation.

Example 2 £3678 @ 65/- per annum from 10th Nov. 1967 to 23rd Jan. 1968 both dates inclusive.

Calculate the number of days involved.

Nov. 21 days

Dec. 31 days

Jan. 23 days = 75 days.

$36.78 \times 3.25 \times 75 + 365 = \text{£}24. 11. 3\text{d.}$

NOTE If using the Decimal Chart the method is as follows:

68.063014 (the decimal for 23.1.68)—67.857534 (the decimal for 9th November in order that the 10th can be counted as a whole day). = .20548

$.20548 \times 36.78 \times 3.25 = \text{£}24. 11. 3\text{d.}$

Note No. 31

THE 993/S – STORAGE REGISTER

INTRODUCTION

The foregoing Notes apply to all models of Comptometer. They can be used equally well with Storage Register equipment, often with greater efficiency, accuracy and speed.

The following Notes will explain some of the more obvious advantages you will gain from using a machine with a Storage Register.

Note No. 31

The 993/S

Addition – Columnar

Add the column of figures from top to bottom and transfer \oplus to the Storage Register.

Re-add the column of figures this time from bottom to top. Visually check that answers in both Registers are the same. Write down the answer from the Working Register – compare written answer with that in the Storage Register. Operate the Storage Transfer Control towards \ominus ; this will achieve two things,

1. will give a **ZERO PROOF** and
2. clear the machine ready for the next addition, calculation, etc.

Addition – Analysis or Cross Casting

Example

	A	B	C	D	Total
1.	236	95	312	43	686
2.	29	73	250	746	1098
3.	423	428	65	92	1008
4.	<u>776</u>	<u>33</u>	<u>231</u>	<u>517</u>	<u>1557</u>
	<u>1464</u>	<u>629</u>	<u>858</u>	<u>1398</u>	<u>4349</u>

Add column A, record answer, transfer \oplus to Storage Register.
Repeat for columns B, C and D.

Record grand total now appearing in Storage Register (4349)

Add line 1, record answer, transfer \ominus from Storage Register

Repeat for lines 2, 3 and 4

BOTH REGISTERS SHOULD NOW READ ZERO.

Subtraction

When two Registers are available subtraction is simplicity itself; no reference whatsoever is made to the small figures on the keytops.

Example 200351 – 10970

Add 200351 into the machine at the right hand side of the keyboard; transfer \oplus to Storage Register.

Add 10970 into the machine at the right hand side of the keyboard; transfer \ominus to Storage Register.

Answer 189381, appears in Storage Register.

DEBITS AND CREDITS

Example 1

£	s.	d.	
16.	3.	9	
13.	1.	8	Cr.
145.	19.	6	
27.	3.	11	
<u>108.</u>	<u>10.</u>	<u>9</u>	Cr.

Add Debit items; transfer \oplus to Storage Register

Add Credit items; transfer \ominus to Storage Register = £67.14.9 – Debit balance.

Example 2

£	s.	d.	
31.	17.	6	
5.	18.	10	Cr.
22.	9.	8	
43.	15.	7	Cr.
6.	11.	3	
<u>18.</u>	<u>1.</u>	<u>5</u>	Cr.

Add Debit items; transfer \oplus to Storage Register

Add Credit items; transfer \ominus to Storage Register

Register reads 9 999 999 993.2.7 indicating a Credit balance.

In order to find the true Credit balance, ignore the 9's and copy 3.2.7 to the keyboard in **small** figures (small 3.02.6) = £6.17.5.

Check the copy back by operating the Storage Transfer Control to \oplus , obtaining zero's in both Registers.

Note No. 31

The 993/S—Continued

Multiplication

Example 3 lb. 6 oz. @ 18/9d.per lb.
 5 lb. 1 oz. @ 7/8d.per lb.
 7½lb. @ 11/3d.per lb.

Accumulation of Products

3. 3. 3
 1.18.10
 4. 1. 7
9. 3. 8

PLACE A DECIMAL POINT IN BOTH WORKING AND STORAGE REGISTERS IN IDENTICAL POSITIONS.

Multiply 3.375 by .9375 (3.16406..) write down the answer — £3.3.3d.— and from the **written** answer enter the pence in the pence column before operating the Storage Transfer Control.

Repeat for the second and third items;

The total now appears in the Storage Register.

Write down the £'s and shillings from the **decimal** total (9.1828.. = £9.3s) and the pence from those appearing in the pence column — 8d.

Answer = £9.3.8d.

Multiplication

Simple Extensions With Discounts And Increments

Example	645	@ £7.10.0d.per 1000	4.16. 9
	2187	@ £1.12.6d.per C	35.10. 9
	38½ doz.	@ £2.14.6d.per doz.	<u>104.18. 3</u>
			145. 5. 9
		Less 7½%	<u>10.17.11</u>
			<u>£ 134. 7.10</u>

Extend each line and transfer \boxplus to the Storage Register.

Hold the figures appearing in the Storage Register (145.28875) and multiply by .075 = 10.8966 ...

You can now record the gross total from the Storage Register (£145.5.9) and the discount from the working Register (£10.17.11d). Transfer \boxminus from Storage Register = £134.7.10d.

Note 1 If the percentage figure is one of increase transfer \boxplus would of course, replace transfer \boxminus .

Note 2 You may find that the figures which form the gross total, i.e. before discount or increment is applied are too awkward to hold. In this event hold the percentage amount, as a decimal and correctly in relation to the decimal point in the Working Register, and multiply by the contents of the Storage Register.

Multiplication

Using the Storage Register as a Memory

Example 3 Ton 9 cwt. 1 qr. 23 lb. @ £68.12.6d.per ton = £238.6.4.

Add 3.45 into Register starting at extreme left hand side of keyboard.

Add .0125 (1 qr.)

Hold .000446428 and multiply by 23 = 3.47276782

As this is an awkward combination of figures to hold transfer \boxplus to Storage Register. Hold the price and carry out a normal two factor multiplication with the figures 'memorised' by the Storage Register.

You will find many uses for the Storage Register to act as a Memory.

Pro-Rating and Proportioning Percentages

There are two ways of utilising the Storage Register when solving these particular problems.

One way uses the Storage Register to memorise the constant.

Example Pro-rate £150 over the following:

37.10. 0
181. 7. 6
82.10. 9
43. 9. 3
£344.17. 6

Find the constant (.434940163) and transfer to the Storage Register.

Calculate each line using the constant 'noted' therein.

Add each calculated amount to check to the figure of pro-ration.

The alternative method involves writing down the constant and accumulating each calculated amount in the Storage Register.

Each method has its advantages and the one you choose will depend upon the work involved.

Percentage of Decrease

Divide the later dated amount by the earlier dated amount in the usual way.

Transfer \square to the Storage Register, this automatically gives you the percentage of decrease

Example

Find the percentage of decrease:	1968	£19573
	1967	£22135

$19573 \times 100 \div 22135 = 88.4255..$

Operate the Storage Transfer Control towards $\square = 911.5745$

Ignore the 9 and read the answer as 11.57% Decrease

NOTE: This method can be used equally well when calculating percentage of Profit.

Note No. 32

THE 993/C

INTRODUCTION

- * All the advantages to be gained from using the 993/S are relevant also to the 993/C.
- * The 993/C has a third register providing semi-automatic multiplication. The advantages and uses of this register are described in the following Notes.

MULTIPLICATION – TWO FACTORS

Example 837.645 x 46.2

Push forward and hold the Multiplier Setting Control and add 837.645, commencing at the extreme left hand side of the keyboard; place the decimal point in the Multiplier Register in its correct position; place a decimal pointer in the Working Register according to the number of whole numbers in BOTH factors. Hold 46.2 at the extreme left of the keyboard and depress these keys **ONCE ONLY** but 'pause' in order to allow automatic multiplication to take place before moving to the right. Continue in this way until all multiplier figures have been used.

There are three positive ways of knowing when the figure in the Multiplier Register has been 'used'.

- i) **By Sense of Hearing:** Sound tone alters on completion of automatic multiplication.
- ii) **By Sense of Touch :** Fingers sense completion of automatic multiplication.
- iii) **By Sense of Sight :** Figures come to rest in Working Register on completion of automatic multiplication.

Example 4285 @ £2.3.7d. each

Enter 2.17916 to the Multiplier Register, hold 4285 on the keyboard and depress these keys **ONCE ONLY** for each of the figures contained in the Multiplier Register, until all have been used.

- NOTES:**
1. If the factor in the Multiplier Register contains a '0' i.e. 32065, it will be necessary to miss one keyboard column.
 2. Any unused figures in the Multiplier Register can be cleared by depressing the 1d.or 1/- key.
 3. There is no 'carry-over' into the next column. For this reason a factor in the Multiplier Register can easily be altered provided the Setting Control is re-engaged.
 To **increase** a figure merely add the difference i.e. 6 to 7 add 1.
 To **reduce** a figure add the complement of the difference, i.e. 6 to 5. 6 is to be reduced by 1, so add 9. 6 to 4. 6 is to be reduced by 2 so add 8 etc.

MULTIPLICATION OF THREE OR MORE FACTORS

Example 182 cases, 16 cartons per case @ £1.1.6d. per carton, plus 5%.

Multiply first two factors together and transfer to Multiplier Register; clear Working Register hold third factor and multiply; transfer to Multiplier Register; clear Working Register; hold fourth factor and multiply.

Answer £3286.18.5d.

ACCUMULATION OF PRODUCTS

			£ s. d.
Example	456 @ 22/9d.	each	518.14. 0
	3274 @ 17/6d.	each	2864.15. 0
	77 @ £5.14.0d.	each	438.18. 0
	28,394 @ 7½d.	each	887. 6. 3
	635 @ £11.3.4d.	each	<u>7090.16. 8</u>
			<u>11800. 9.11</u>

In this type of calculation it will be necessary to work around a fixed decimal point in the Working Register and to place the decimal point in the Storage Register in an identical position. Normal rules for working over a fixed decimal point apply as does the need for keeping a note of true pence in the pence column.

NOTE: It is not necessary to work around a fixed decimal point in the Multiplier Register; you may select any position you wish provided that the decimal point is placed in its correct position in the factor you have added into this Register.

Note No. 32

The 993 C—Continued

Where quantities are small

	£	s.	d.
Example 127 @ 4/9d.each	30.	3.	3
56 @ £1. 3. 2d.each	64.	17.	4
19½ @ 52/8d.each	51.	7.	0
	146.	7.	7
Less 5%	7.	6.	5
	139.	1.	2

Add quantities including discount (or increment) into Multiplier Register **ALL AT ONCE** i.e. 127 56 19.5 5. Using a fixed decimal point in both Working and Storage Registers, extend each line and accumulate in the Storage Register in the usual way.

Pick up and hold the total of the accumulated items, in this example £146.37916, multiply by the amount of discount (or increment) still in the Multiplier Register and subtract from (or add to in the case of a plus%) the Storage Register.

NOTE: In order to accumulate true pence in the pence column it will be necessary to retain part of the keyboard factor and to hold it in a depressed position until the pence have been entered in the pence column.

THE CONSTANT FACTOR 'R' CONTROL

1 When one factor in a series of multiplications is constant

The 'R' control should be positioned upwards in order to retain the constant factor. By engaging the Multiplier Setting Control between each calculation the constant is again made 'active' and can be used as many times as is necessary.

Example 324 all at 26/10½d.each
98
157 etc.

Enter 1.34375 into the Multiplier Register in the usual way.

Now position the 'R' control upwards. Hold 324 and multiply as before = £435.7.6d.

Re-engage the Multiplier Setting Control and hold 98 = £131.13.9d.

Continue in this way until all quantities have been multiplied by the constant price. Before the final multiplication but **AFTER** engaging the Multiplier Setting Control, return the 'R' Control to its downwards position; the Multiplier Register will then clear automatically as the calculation progresses.

NOTE: It is important to make sure that any unused figures are cleared from the Multiplier Register.

2 Split Multiplication

Example 5993.1487 x 62 $\frac{1}{12}$

Enter 5993.1487 into the Multiplier Register and position the 'R' Control upwards.

Hold the first part of the second factor and multiply in the usual way. Re-engage the Multiplier Setting Control, hold the second part of the second factor and complete the multiplication. Return the 'R' Control to its downwards position and clear out any unused figures in the Multiplier Register.

NOTE: When you are familiar with this sequence try holding the **second** part of the second factor first; in this way you avoid unused figures being left in the Multiplier Register.

ADDITION OF DEBITS AND CREDITS

	£	s.	d.
Example 1	87.	10.	6
	73.	13.	2 Cr.
	8.	14.	5
	26.	11.	9 Cr.
	109.	15.	1

Add Debit items; transfer \oplus to Storage Register.

Add Credit items; transfer \ominus to Storage Register = £105.15.1 d. – Debit Balance.

Note No. 32

The 993 C—Continued

Example 2	£	s.	d.	
	401.	7.	0	
		7.	9.	7 Cr.
	54.	11.	5	
	17.	3.	8	
		2.	2.	6 Cr.
	<u>972.</u>	<u>18.</u>	<u>4</u>	Cr.

Add Debit items; transfer \oplus to Storage Register.

Add Credit items; transfer \ominus to Storage Register.

Register reads 9 999 999 490.11.8 indicating a Credit balance.

In order to find the true Credit balance copy all figures to the working Register. To simplify this, the 9's can be copied by depressing the subtraction selector immediately to the left of 490.11.8.

The figures in both working and storage Registers should now be identical.

Hold the Multiplier Setting Control and operate the Storage Transfer Control to \ominus **TWICE**. The true Credit balance is now showing in the Storage Register, i.e. £509.8.4d.

Release the Multiplier Setting Control, operate the Storage Transfer Control to \oplus to obtain zero's in both Registers.

ANITA

The section which follows introduces ANITA – the all British Electronic Desk Calculator.

Learning to use ANITA is an integral part of your Diploma Course and the gaining of the ANITA Certificate is an important qualification to add to your Comptometer Diploma.

Note No. 33

ANITA

MULTIPLICATION

TWO FACTOR

Example 37.5 x 186.25

Engage \boxtimes on the Instruction Panel

Enter 37.5 on the keyboard commencing column 1, engaging keyboard decimal point No. 3; that is after entering 7 and before entering 5.

Enter 186.25 on the key line; touch the Decimal Point Control after entering 6 and before entering 2. = 6984.375.

With the result of the above calculation still in the Register touch \ominus . This causes the factor on the keyboard to be divided into the result in the Register, and will prove the entry of the key line factor.

Touch \otimes which will automatically recall the answer.

NOTE: When the Multiplier is a decimal number, tell ANITA there are no whole numbers by first entering '0' on the Multiplier line. A Multiplier of .86 will be entered as 0.86, one of .057 as 0.057 and so on.

TWO FACTOR – ALTERNATIVE

1. Example 37.5 x 186.25

Engage \boxplus on the Instruction Panel.

Add 37.5 at the left-hand side of the keyboard.

Engage \boxtimes on the Instruction Panel.

Enter 186.25 on the keyboard at the left-hand side.

Both factors are now visible for checking.

Touch \otimes = 6984.375

THREE OR MORE FACTOR

Example 3.64 x 41.3 x 48.75

Multiply 3.64 by 41.3; clear keyboard, enter 48.75 then touch \otimes = 7328.685.

Accumulative

Example 45.6 x 127.5
216.3 x 38.142
24.5 x 6.27

In this example engage keyboard decimal point 5 and use it as your fixed decimal point. (It is better to start one column in so that you will be sure you will not lose any figures off the left of the Register).

Enter 45.6 on the keyboard and 127.5 on the key line.

Clear keyboard and enter 216.3 to the keyboard and 038142 on the keyline.

Clear keyboard and enter 24.5 on the keyboard and 00627 on the key line.

Answer = 14217.7296.

NOTE: It is essential that the unit figure of all key line entries be in the same position. This is why 38.142 was entered as 038.142 and 6.27 was entered as 006.27.

ANITA
MULTIPLICATION—Continued

CONSTANT FACTOR

Example 1275 x 1.375 = 1753.125
 62.8 x " = 86.35
 137.5 x " = 189.0625
 1.24 x " = 1.705

Enter the constant on the keyboard and the variable factors on the key line, clearing the Register only between each calculation.

NOTE: It is **not** necessary to re-set the decimal point each time.

Note No. 34

ANITA

DIVISION

SIMPLE

Example $236.25 \div 6.25$

Engage \div on the Instruction Panel.

Enter 6.25 on the keyboard commencing column 1.

Enter 236.25 to the Register through the key line.

Both factors are visible for checking.

Touch \ominus

Answer = 37.8

As in multiplication the decimal point has positioned itself correctly in the answer, quite automatically.

NOTE: You can also enter the dividend to the Register with \oplus engaged on the Instruction Panel; engage \div before entering divisor on the keyboard, then touch \ominus .

CONSTANT DIVISOR

Example	263.5)	All divided by 62	= 4.25
	77.5)		= 1.25
	21.08)		= 0.34

With \div engaged on the Instruction Panel enter the divisor on the keyboard and the variable dividends through the key line; touch \ominus then clear the Register only between each division.

ANITA

ADDITION AND SUBTRACTION

With \oplus engaged on the Instruction Panel figures entered on the keyboard will add directly to the Register.

When \ominus is engaged on the Instruction Panel figures entered on the keyboard will be directly subtracted from those appearing in the Register.

ADDITION

Example – Whole Numbers

$$\begin{array}{r} 38 \\ 76 \\ 112 \\ 27 \\ 43 \\ \hline 269 \\ \hline 565 \end{array}$$

Engage \oplus on the Instruction Panel.

Add 38, 76 etc. adding UNITS in column 10, TENS in column 9, HUNDREDS in column 8.

Register reads 565

Example – Whole Numbers and Decimals

$$\begin{array}{r} 125.25 \\ 276.37 \\ 39.14 \\ 148.2 \\ 9.15 \\ 27.4 \\ \hline 625.51 \end{array}$$

Use a keyboard decimal point to illuminate the decimal point position in the Register; whole numbers will be added to the left of this position and decimals to the right of it.

Register reads 625.51

Example – £.s.d.

$$\begin{array}{r} \text{£. s. d.} \\ 1.15. 6 \\ 6. 9. 11 \\ 12.14. 8 \\ 32. 7. 9 \\ 9.16. 3 \\ 10. 9. 7 \\ 3.18. 10 \\ 42. 9. 5 \\ 16. 4. 6 \\ \hline 2.12. 8 \end{array}$$

Add pence in columns 9 and 10, shillings in columns 6 and 7, and £'s in columns 1, 2, 3 and 4.

Register reads £133 113 073d.

To convert pence to shillings and pence

Engage \boxtimes on the Instruction Panel.

Engage the Non-Shift Control.

Enter 988 on keyboard in columns 8, 9 and 10.

Note No. 35

ANITA

ADDITION AND SUBTRACTION—Continued

Operate the No. 1 key on the Key Line until pence have reduced to less than 12. This reducing process can be accelerated by the use of a higher valued key on the Key Line such as will obviously leave a remainder less than 12.

Register reads £133 119s.001d.

To convert shillings to £'s and shillings

Clear keyboard and enter 98 in columns 5 and 6.

Operate the No. 1 key (or higher) on the Key Line until shillings have reduced to less than 20.

Register now reads £138.19.1d.

Clear Non-Shift Control

The alternative method of reducing pence to shillings and pence and shillings to £'s and shillings is as follows.

With \oplus still engaged on the Instruction Panel hold 988 in columns 8, 9 and 10: depress these three keys simultaneously until pence have reduced to less than 12.

To reduce shillings to £'s and shillings you hold 98 in columns 5 and 6 and again simultaneously depress these keys until shillings have reduced to less than 20.

SUBTRACTION

Whole Numbers

Example 8675 – 5421

Engage \oplus on the Instruction Panel.

Add 8675 at right hand side of keyboard.

Engage \ominus on the Instruction Panel.

Add 5421 at right hand side of keyboard.

Register reads 3254

Whole Numbers and Decimals

Use a keyboard decimal point to illuminate the decimal position in the Register; whole numbers will be added to the left of this position and decimals to the right of it.

£.s.d.

Example 1 £18.19.6d. – £13.16.2d.

Engage \oplus on the Instruction Panel.

Add 18 in columns 3 and 4, 19 in columns 6 and 7 and 6 in column 10.

Engage \ominus on the Instruction Panel.

Add 13 in columns 3 and 4, 16 in columns 6 and 7 and 2 in column 10.

Register reads 000005003004
= £5.3.4d.

ADDITION AND SUBTRACTION—Continued

Example 2 £3.2.6d.— £ 18s.11d.

Engage \oplus on the Instruction Panel.

Add 3 in column 4, 2 in column 7 and 6 in column 10.

Engage \ominus on the Instruction Panel.

Add 18 in columns 6 and 7 and 11 in columns 9 and 10.

Register reads 000002983995.

With \ominus still engaged on the Instruction Panel:—

Add 988 in columns 8, 9 and 10

Register reads 000002983007.

Add 98 in columns 5 and 6.

Register reads 000002003007.
= £2.3.7d.

Note No. 36

ANITA

MULTIPLICATION FOLLOWED BY DIVISION

Example $49.5 \times 231.12 \div 16.5 = 693.36$

Multiply the first two factors together commencing in the second column from the left; clear the keyboard, enter the divisor commencing column 1 and touch € .

NOTE: It was not necessary to engage € on the Instruction Panel before touching € .

Example 539 lb. @ 82/6d.per cwt. = £19.17.0d.

ANITA

PERCENTAGE CALCULATIONS

Percentage of an Amount

Example 27½% of £10.6.3d. = £2.16.9d.

Multiply .275 by 10.3125

Discounts and Increments

Example 1 87½ dozen @ £5.15.0d. per dozen

Less 8½%

£	s.	d.
	503.	2. 6
	42.15.	4
	460.	7. 2

Multiply 87.5 by 5.75; clear keyboard and enter .085.

Touch \otimes for discount; touch € to recall result of extension.

Clear Keys and enter .915; \otimes for net amount.

Example 2 19¼ lb. @ 14/6 per lb.

Plus 3½%

£	s.	d.
	13.19.	2
	9.	9
	14.	8.11

Multiply 19.25 by 0.725; clear keyboard and enter .035.

Touch \otimes for increment; touch € to recall result of extension.

Clear Keys and enter 1.035; touch \otimes .

Chain Discounts and Increments

Example 67 articles @ £1.15.6d. each, less 7½%, less 5%, plus 8%.

Multiply all factors together as in continued multiplication.

i.e. $67 \times 1.775 \times .925 \times .95 \times 1.08 = \text{£}112.17.4\text{d.}$

NOTE: If the same 'chain' occurs for several items work this out first and make a note of it; it could even be used as a constant keyboard factor if the work is suitable.

To find what per cent one amount is of another

Add the amount following **IS** into the machine.

Divide by the amount following **OF, divided by 100.**

The answer will be expressed as so much per cent (%).

Example What % is 23769 of 75498?

Divide 23769 by 754.98 = 31.5%

Percentage of Increase or Decrease

Example a) 1965 £21375
 1964 £18796
 = 13.7% Inc.

b) 1965 £5942
 1964 £6817
 = 12.8% Dec.

Add the later dated amount into the machine and find its percentage of the earlier dated amount.

If the answer is **MORE THAN** 100% subtract 100 and the answer will be a percentage of **INCREASE.**

If the answer is **LESS THAN** 100% subtract it from 100 and the answer will be a percentage of **DECREASE.**

If you have to show both amount and percentage of Increase or Decrease:

Subtract the smaller amount from the larger amount to give actual amount of increase or decrease and divide by the earlier dated amount to give percentage.

ANITA

MISCELLANEOUS EXTENSIONS

METRIC CONVERSIONS

Example Kilos @ price per lb.
 Metres @ price per yard
 Litres @ price per gallon etc.

Multiply weight or measurement by price and by Metric Conversion Table.

CALCULATIONS OF WEIGHTS, MEASURES, ETC.

Example Ton cwt. qr. lb. @ price per ton
 Cwt. qr. lb. @ price per cwt.
 Yds, ft, ins. @ price per yard
 Gr. doz. sin. @ price per gross
 Hours mins. @ rate per hour
 Lb. oz @ price per lb.
 Galls. qts. pts. @ price per gall.

Use the appropriate decimal chart to obtain the decimal equivalent of weight or measurement then multiply by the price.

Ton cwt. qr. lb. @ price per lb.
Cwt. qr. lb. @ price per lb.
Yds. ft. ins. @ price per inch
Gr. doz. sin @ price per single
Lb. oz. @ price per oz.
Galls. qts. pts. @ price per pint

Calculate as if priced per ton, per cwt. per yard etc., using the appropriate chart to find the decimal equivalent of the parts in relation to the whole.

Multiply by price then by 2240, 112, 36 etc.

ANITA

PRO-RATING AND PROPORTIONING PERCENTAGES

Example 1 Pro-rate £255 to:

£		£ s. d.
87		68. 5. 3
134		105. 2. 9
98		76.17.10
<u>6</u>		<u>4.14. 2</u>
		<u>255. 0. 0</u>

Add amounts to be pro-rated and divide into £255.
 Copy-back constant to keyboard; touch ⌘ to prove copy-back.
 Clear Register and multiply by each amount in turn.
 Add new figures to prove that total equals £255.

Example 2 Show what percentage each item is of the total

		%
17.6	=	18.9
32.3	=	34.6
19.1	=	20.5
<u>24.25</u>	=	<u>26.0</u>
		<u>100.0</u>

Add amounts to be percentaged copy-back to keyboard and touch ⌘ to prove; clear Register. Divide the total now on keyboard by 100 in order that answers may be shown as percentages, i.e. $93.25 \div 100 = .9325$. Use this decimal as a constant divisor.
 Enter 17.6 through the Key Line, touch $\text{⌘} = 18.9\%$
 Clear Register and continue for all items.
 Add percentage figures to ensure that total equals 100%.

ANITA

THE RING DECIMAL POINT

The two rules for using the Ring Decimal Point with numbers less than 0.1 are:

- a) When entering to the keyboard, the number of zeros between the decimal point and first significant figure is subtracted from 12.
- b) When reading from the Register subtract the decimal point number from 11 to give the number of zeros to precede the result shown.

TWO FACTOR MULTIPLICATION

Example .007569 x .000864

Engage \oplus and enter 7569 at the extreme left-hand side of the keyboard. There are two zeros, so 2 from 12 = 10, therefore touch decimal point 10.

Engage \otimes and enter 864 at the extreme left-hand side of the keyboard. There are three zeros so 3 from 12 = 9, therefore engage decimal point 9.

Touch \otimes . Register shows 0653961.6 but the decimal point has, in fact, gone round on the ring. The point is illuminated at 7, so 7 from 11 = 4. You must therefore precede the Register figures by 4 zeros. Note there is another zero at the extreme left-hand end of the Register which must be taken into account; your answer is therefore, .000006539616.

THREE OR MORE FACTOR MULTIPLICATION

Example .075 x .00326 x .0875

The procedure for the first two factors follows that described in two factor multiplication.

The third and subsequent factors will be entered in a similar manner to the second factor.

Engage \oplus and enter 75 at left-hand side of keyboard; touch decimal point 11.

Engage \otimes and enter 326 at left-hand side of keyboard; engage decimal point 10; \otimes .

Clear keys, enter 875 at left-hand side of keyboard; engage decimal point 11; \otimes = .00002139375.

SIMPLE DIVISION

Example .0937 ÷ .00345

Engage \oplus and enter 937 at extreme left-hand side of the keyboard; touch decimal point 11.

Engage \ominus and enter 345 at the extreme left-hand side of the keyboard; engage decimal point 10; \ominus .
Answer 27.15942029

The Ring Decimal Point is also utilised when dealing with very large numbers when the whole number capacity of the Register is exceeded.

Example 637510 x 789125

Engage \otimes and multiply the two factors together.

The Register reads 5.0307507875 but the answer is obviously much greater than this and again the point has gone round on the ring. As decimal point 1 is illuminated this indicates that one zero must be added to the figures showing in the Register. The answer is therefore, 503 075 078 750.

Note No. 41

ANITA

THE TAB CONTROL

The Tab Control will enable you to maintain maximum capacity at all times.

Example 1 .0016235 x 4698.75

Engage \oplus and enter 16235 at extreme left-hand side of keyboard, touch decimal point 10.

Engage \boxtimes touch $\left[\leftarrow \rightarrow \right]$ and enter 4698.75 at extreme left-hand side of the keyboard; touch \otimes .
= 7.628420625

Example 2 $\frac{482.75}{1.56 \times 24.5}$

In this example the Tab Control must be operated following the first division in order to move the contents of the Register one place to the right and so leave number tube zero displaying '0'.

$$482.75 \div 1.56 = 309.4551282$$

Clear keyboard, touch $\left[\leftarrow \rightarrow \right]$, enter 24.5; touch \odot . = 12.630821559.

This section introduces the sterling programmes of ANITA MK. 10. ANITA MK. 10 is unique because it will calculate directly whole numbers, decimals, fractions, at an £.s.d. rate to give a Sterling result. It is versatile because it also has full decimal calculating facilities.

The following notes explain the uses of the Sterling Controls.

ANITA MK. 10—Continued

Both multiplication and division can be carried out by using the alternative method of entry provided that it is the sterling amount which is added into the Register. If the alternative method of entry were used for the examples illustrated the sequence would become:—

1. 37 articles @ £4.12.5d.each

Engage $\boxed{+}$
 Touch keyboard point 3 and enter 5 touch \boxed{d}
 Enter 12 to the keyboard touch \boxed{S}
 Enter 4 " " "
 Engage $\boxed{\times}$
 Enter 37. on to the keyboard, touch $\boxed{\times}$, touch \boxed{f}
 = £170.19.5d.

2. £257.3.10d.÷ 32%

Engage $\boxed{+}$
 Touch keyboard point 4 and enter 10 touch \boxed{d}
 Enter 3 to the keyboard touch \boxed{S}
 Enter 257 " " "
 Engage $\boxed{+}$
 Enter 32.75 on to keyboard, touch $\boxed{\div}$, touch \boxed{f}
 = £7.17.1d.

THREE OR MORE FACTOR MULTIPLICATION

Example 26 cases, 18 in each case at 28/9½d.each

Enter 26. on the keyboard
 Enter 09.5 on the key line, touch \boxed{d}
 Enter 28 on the key line, touch \boxed{S}
 Clear keys
 Enter 18. on the keyboard, touch $\boxed{\times}$, touch \boxed{f}
 = £673.14.6d.

Note No. 44

ANITA MK. 10

USE OF STERLING CONTROLS FOR DIVISION

Example 123½ inches @ £1.19.3d.per foot.

Enter 123.5 to the keyboard

Enter 03 to the key line, touch decimal point touch **[.]**

Enter 19 " " " " touch **[S]**

Enter 01 " " " " touch **[.]** (to divide by 12) touch **[F]**
= £20.3.11

Extensions of singles at a price per dozen would be calculated in a similar manner.

To calculate singles at a price per gross touch **[.] twice** before touching **[F]** .

To calculate singles at a price per score, touch **[S]** – divide by 20 – then **[F]** .

Price per 400, touch **[S] twice**, then **[F]** .

Note No. 45

DECIMAL CURRENCY ROUND-OFF INSTRUCTIONS

The new Storage Register Decimal/Sterling Comptometer is fitted with a Rounding Feature for use when Decimal Currency is introduced in 1971.

The Rounding Feature will enable you to round off new Decimal Currency amounts to either the nearest new penny or the nearest new halfpenny and will ensure that the storage register shows the exact total of the rounded-off amounts which you have written down.

The feature consists of two red controls and a contrasting No. 5 key in the existing Sterling £100 column (see separate note for Decimal model).

When using the Rounding Feature **ALWAYS** work round a fixed decimal point between the existing Sterling £10,000 and £100,000 columns (see separate note for Decimal model).

NEW PENNY CALCULATIONS

When you want to calculate to the nearest new penny:-

1. Latch the red Penny Rounding Control (the red control to the right of the 1d. and 2d. keys).
2. Carry out the calculation in the normal way (round the fixed decimal point described above) and then depress the No. 5 Rounding Key (the light coloured key in the existing Sterling £100 column).
3. Note the answer, reading the first two decimal places (new pennies) *as shown* ignoring all figures to the right of them.
4. Transfer to store.

(You will notice that the figures in the 3rd, 4th and 5th decimal positions do not transfer to store).

When you have finished the series of calculations, unlatch the Penny Rounding Control.

A simple example will make the procedure clear (the shillings and pence columns are not shown):-

1.2 @ £1.22

- * Latch the red Penny Rounding Control.
- * Multiply 1.2 x 1.22 and depress the No. 5 Rounding Key:- 1.46900
- * Note the answer:- £1.46
(£1.46 is right, not £1.47. Remember, read the first two decimal places *as shown* in the register; the machine has already carried out any rounding-off that is necessary).
- * Transfer to store. The storage register shows:- 1.46000

Note No. 45.

DECIMAL CURRENCY ROUND-OFF INSTRUCTIONS—Continued

NEW HALFPENNY CALCULATIONS

When calculating to the nearest new halfpenny:-

1. Make sure the Penny Rounding Control is unlatched.
2. Carry out the calculation in the normal way (round the fixed decimal position as before).
3. Look at the result and carry out one of the following operations:-
 - a. If the 3rd, 4th and 5th decimal figures lie between 250 and 749, operate the red Halfpenny Rounding Control (which you will find next to the subtraction selectors).
 - b. If the 3rd, 4th and 5th decimal figures lie between 250 and 749, operate the red Halfpenny Rounding Control and depress the No. 5 Rounding Key **ONCE**.

(The red Halfpenny Rounding Control clears the 3rd, 4th and 5th decimal figures from the register, allowing you to adjust the answer if necessary by means of the No. 5 Rounding Key).
 - c. If the 3rd, 4th and 5th decimal figures lie between 750 and 999, operate the red Halfpenny Rounding Control and depress the No. 5 Rounding Key **TWICE**.
4. **Note the answer and transfer to store.**

An example will help you to understand the procedure (again, the shillings and pence columns are not shown).

2.25 @ £2.25½

- | | |
|---|---------|
| * Make sure the Penny Rounding Control is unlatched | |
| * Multiply 2.25 x 2.255:- | 5.07375 |
| (The 3rd, 4th and 5th decimal figures – “375” – lie between 250 and 749). | |
| * Operate the red Halfpenny Rounding Control:- | 5.07000 |
| * Depress the No. 5 Rounding Key ONCE :- | 5.07500 |
| * Write down the answer:- | £5.07½ |
| * Transfer to store. The storage register shows:- | 5.07500 |

Remember that the Penny Rounding Control must **ALWAYS** be **UNLATCHED** except when rounding to the nearest new penny.

One final point. When adding or subtracting in the new Decimal Currency you may find it convenient to use the existing 10/- Key to present the new halfpenny.

DECIMAL MODEL

The operation of the Rounding Feature in this model is as already described.

The No. 5 Rounding Key, however, is located in the third column of keys from the right and the fixed decimal position

Note No. 46

DECIMALISATION

Note No. 47

METRICATION

