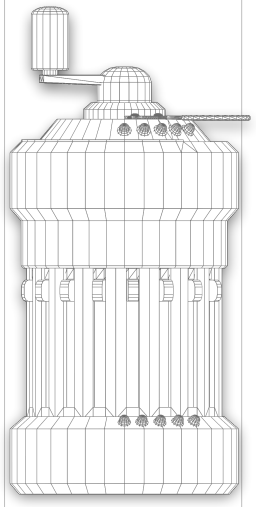
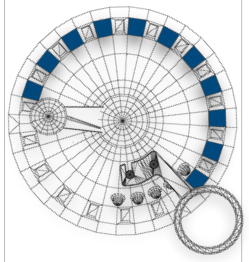
CURTA

ALGORITHMS

1 C

DIVISION





a	**Division -** additive method - 1
b	**Division -** additive method - 2
c	**Division -** Subtractive method. (Useful when a result already exists in PR)
d	**Successive division.** (to get a result in PR)

Decimal rule for division:

Decimal places in PR – decimal places in SR = **decimal places of the result**

Marking : dpPR – dpSR = dpR

1 C

1C
a

Division - additive method - 1

	729 ÷ 32.4 = ?	Setting	Carriage/Inverter	Turns	Counter	Product
	a ÷ b	Clear	↑		Clear	Clear
1	Set the divisor b	3 2.4 8 7 6 5 4 3 2 1	6 5 4 3 2 1 ▲	3 +	3 ▲	9 7 2 11 10 9 8 7 ▲ 5 4 3 2 1
	Carriage at the maximum displacement Develop PR as close as possible to the dividend 729 by positive turns Negative turn when the dividend is exceeded (overflow)	3 2 4	6	–	2	6 4 8
		3 2 4	5	3 +	2 3	7 4 5 2
		3 2 4	5	–	2 2	7 1 2 8
2	5 decimal places at PR and 1 in SR By applying the rule of decimal places for the division dpPR – dpSR = dpR, 5 — 1 = 4, Result: 22.5	3 2.4	6 5 4 3 2 1 ▲	5 +	2 2.5 ▲	7 2 9 11 10 9 8 7 6 5 ▲ 3 2 1

Source: " Instructions for use of the Curta ", Contina / Bernard Stabile - 2023

Division - additive method - 2

0.4847 ÷ 0.0085998 = ?		Setting	Carriage/Inverter	Turns	Counter	Product
a ÷ b		Clear	⬆		Clear	Clear
		0.0085998 (8 7 6 5 4 3 2 1)	6 (6 5 4 3 2 1) ▲	6 +	6 ▲	515988 (11 10 9 8 7 ▲ 5 4 3 2 1)
1	Set the divisor b Develop PR as close as possible to the dividend 0.4847 by positive turns Negative turn when overflow occurs	85998	6	–	5	42999
		85998	5	7 +	57	4901886
		85998	5	–	56	4815888
		85998	4	4 +	564	4850272
		85998	4	–	563	4841684
		85998	3	7 +	5637	4847072
		85998	3	–	5636	4846847 28
		85998	2	2 +	56362	4847019276
		85998	2	–	56361	4846933278
2	11 decimal places at PR and 7 in SR By applying the rule of decimal places for the division dpPR – dpSR = dpR, 11 – 7 = 4, Result: 56.3618	0.0085998	6 5 4 3 2 1 ▲	8 +	56.3618 ▲	.4847002076 4 (11 10 9 8 7 6 5 4 3 2 ▲)

Source: " Instructions for use of the Curta " , Contina / Bernard Stabile - 2023

Division - Subtractive method. (Useful when a result already exists in PR)

(8.858 + 9.33 + 7.506 + 9) ÷ 393.632 = ?		Setting	Carriage/Inverter	Turns	Counter	Product
(a + b + c + d) ÷ e		Clear	⬆		Clear	Clear
1	The additions Set a	8.858	6 5 **4** 3 2 1 ▲	+	1 ▲	8.858
2	Set b	9.33	4	+	2 ▲	18.188
3	Set c	7.506	4	+	3 ▲	25.694
4	Set d	9	4	+	4 ▲	34.694
5			⬇		Clear	
6	Set the divisor e as far to the left hand as possible but making sure that the dividend in corresponding position above, is relatively greater than the divisor Make many negative turns as possible to reduce PR to 0 When the '9' appear, the result is negative (underflow): positive turn	393.632	4	9 −	9 ▲	9926712
		3 9 3 6 3 2	4	+	8	3 2 0 3 4 4
		3 9 3 6 3 2	3	9 −	8 9	9 9 6 6 0 7 5 2
		3 9 3 6 3 2	3	+	8 8	5 4 3 8 4

1C

C

	(8.858 + 9.33 + 7.506 + 9) ÷ 393.632 = ?	Setting	Carriage/Inverter	Turns	Counter	Product
6	The same think to the successive Carriages	3 9 3 6 3 2	2	2 —	8 8 2	9 9 9 7 5 6 5 7 6
		3 9 3 6 3 2	2	+	8 8 1	1 5 0 2 0 8
		3 9 3 6 3 2	1	4 —	8 8 1 4	9 9 9 9 9 2 7 5 5 2
7	Decimal rule for division, dpPR – dpSR = dpR, 9 — 4 = 5 In PR, the remainder: 0.03… In CR, the result: 0.08813	3 9 3.6 3 2	1	+	0.0 8 8 1 3 ▲	0.0 0 3 2 1 1 8 4 11 10 9 8 7 6 5 4 3 2 ▲

Source: " Instructions for use of the Curta " , Contina / Bernard Stabile - 2023

1C

C

Successive division. (To get a result in PR)

Suppose we have a figure in PR at some stage of calculation, and we want to divide it by some divisor and obtain the quotient in PR, perhaps because we want to divide the quotient by another figure. We use a method which we have called 'Successive Division', because of the analogy to successive multiplication. The method is sometimes called 'Complementary Division'.

Note that although extra figures may be produced in PR, the quotient can only be obtained accurately to the same number of figures as the capacity of CR.

Note that the quotient is also produced in CR and this can he used as a check that the calculation has been performed accurately.

Successive division can be very useful but takes a little practice. The operator should carry the two left hand figures of the divisor in his mind during the operation.

Since the quotient remains in PR, it can be divided by a further divisor, either by subtractive division or by successive division.

567 ÷ 456 = ?		Setting	Carriage/Inverter	Turns	Counter	Product
a ÷ b		Clear	⬆		Clear	Clear
1	Set the dividend a Bring it in PR	5 6 7 8 7 6 5 4 3 2 1	6 5 4 3 2 1 ▲	+	1 ▲	5 6 7 11 10 9 8 7 ▲ 5 4 3 2 1
2					Clear	
3	Set the complement of the divisor 456 (544) preceded by a '9' Note the left hand figures of the divisor, 95	9 5 4 4 8 7 6 5 4 3 2 1	6			5 6 7
4	Watch for the two figures in front of the first two digits of SR Compensate with a negative turn when they become more than 95	9 5 4 4	6	2 +	2	1 9 6 5 5 9 5 4 4
		9 5 4 4	6	–	1	1 0 1 1 1
		9 5 4 4	5	3 +	1 3	1 2 9 7 4 2 9 5 4 4
		9 5 4 4	5	–	1 2	1 2 0 1 9 8

	567 ÷ 456 = ?	Setting	Carriage/Inverter	Turns	Counter	Product
4	Repeat the procedure with successive positions of the Carriage…	9 5 4 4	4	5 +	1 2 5	1 2 4 9 7 9 5 4 4
		9 5 4 4	4	–	1 2 4	1 2 4 0 1 5 6
		9 5 4 4	3	4 +	1 2 4 4	1 2 4 3 9 7 3 6 9 5 4 4
		9 5 4 4	3	–	1 2 4 3	1 2 4 3 0 1 9 2
		9 5 4 4	2	5 +	1 2 4 3 5	1 2 4 3 4 9 6 4 9 5 4 4
		9 5 4 4	2	–	1 2 4 3 4	1 2 4 3 4 0 0 9 6
		9 5 4 4	1	3 +	1 2 4 3 4 3	1 2 4 3 4 2 9 5 9 2 9 5 4 4
5	Decimal rule for division, dpPR – dpSR = dpR, 5 – 0 = 5 The quotient is produced in PR and CR a check that the calculation has been well performed. Result: 1.24342	9 5 4 4	1	–	1.2 4 3 4 2 ▲	1.2 4 3 4 2 0 0 4 8 11 10 9 8 7 6 5 4 3 2 ▲

Source: " Curta calculating techniques " / Bernard Stabile - 2023