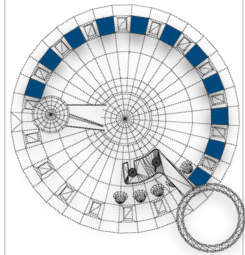
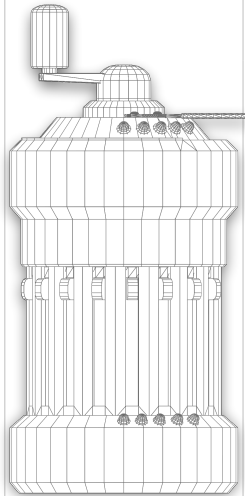


CURTA

ALGORITHMS



M U L T I P L I C A T I O N

- a Basic **multiplication**
- b **Multiplication** with constant factor
- c Shortened method of **multiplication - 1**
- d Shortened method of **multiplication - 2**
- e Shortened method of **multiplication - 3**
- f **Multiplication** with multiplicand already in CR

Decimal rule for multiplication:

Decimal places in SR + decimal places in CR = **decimal places of the result**

Marking : $dpSR + dpCR = dpR$

1B
a

Basic multiplication		Setting	Carriage/Inverter	Turns	Counter	Product
$8,549.2 \times 0.03204 = ?$		Clear	↑		Clear	Clear
1	Set the longest factor Develop the other factor in CR with positives turns and successive Carriage positions	8 5 4 9.2 8 7 6 5 4 3 2 1	6 5 4 3 2 1 ▲	4 +	4 ▲	3 4 1 9 6 8 11 10 9 8 7 6 5 4 3 2 ▲
2	The next digit of the multiplier being zero...	8 5 4 9 2	2	o	0 4	3 4 1 9 6 8
3	... Next carriage. Develop 2 in CR	8 5 4 9 2	3	2 +	2 0 4	1 7 4 4 0 3 6 8
4	Next digit. Develop 3 with Carriage 4 Decimal rule: $dpSR + dpCR = dpR$, $1 + 5 = 6$ Result: 273.91368	8 5 4 9.2	6 5 4 3 2 1 ▲	3 +	0.0 3 2 0 4 ▲	2 7 3.9 1 6 3 6 8 11 10 9 8 7 6 5 ▲ 3 2 1

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

1B
b



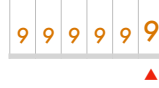


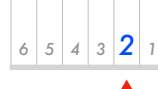


Multiplication with constant factor		Setting	Carriage/Inverter	Turns	Counter	Product
$8,549.2 \times 0.00304 = ?$ a x b						
1	Live the machine as it is at the end of previous example	8 5 4 9 . 2	4		3 2 0 4	2 7 3 9 1 3 6 8
2	Eliminate the figure 3 in CR	8 5 4 9 . 2	4	3 -	0 2 0 4	1 7 4 4 0 3 6 8
3	Develop 3 with a positive turn. Decimal rule: $dpSR + dpCR = dpR$, $1 + 5 = 6$ Result: 25.989568	8 5 4 9 . 2	6 5 4 3 2 1 ▲	+	0.0 0 3 0 4 ▲	25.989568 11 10 9 8 7 6 5 4 ▲ 2 1

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

1B

Shortened method of **multiplication - 1**

C

		Setting	Carriage/Inverter	Turns	Counter	Product
13,974 x 9 = ?		Clear	↑		Clear	Clear
a x b						
1	<p>Set a</p> <p>Instead of multiplying 13,974 by 9, we can calculate $13,974 \times (10 - 1)$, or $- 13,974 + (13,974 \times 10)$</p>			-		
2	<p>Multiplication by 10: one positive turn at Carriage 2</p> <p>This turn is a zero turn. Result with 2 turns instead of 9. Result: 125,766</p>			+		

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

1B
d

Shortened method of **multiplication - 2**

784.45 x 927.9 = ?		Setting	Carriage/Inverter	Turns	Counter	Product
a x b		Clear	↑		Clear	Clear
1	Set a Negative turn The last figure in CR is the last digit of the multiplier	7 8 4 . 4 5 8 7 6 5 4 3 2 1	6 5 4 3 2 1 ▲	-	9 9 9 9 9 9 ▲	9 9 9 9 9 9 2 1 5 5 5 11 10 9 8 7 6 5 4 3 2 ▲
2	Carriage 2. The next '9' in CR must be a '7'	7 8 4 4 5	2	2 -	9 9 9 9 7 9	9 9 9 9 8 3 5 2 6 5 5
3	The next '9' must be a '2'. Making a zero turn	7 8 4 4 5	3	+	7 9	6 1 9 7 1 5 5
4	Two additive turns to Develop the '2'	7 8 4 4 5	3	2 +	2 7 9	2 1 8 8 6 1 5 5
5	Two subtractive turns produces a '9', the first figure of the multiplier	7 8 4 4 5	4	-	9 9 9 2 7 9	9 9 9 4 3 4 4 1 1 5 5
6	Decimal rule: $dpSR + dpCR = dpR$, $2 + 1 = 3$ The other '9' can be eliminated by a zero turn . Result: 727,891.155 We have used 8 turns instead of 27	7 8 4 . 4 5	6 5 4 3 2 1 ▲	+	9 2 7 9 ▲	7 2 7 8 9 1 . 1 5 5 11 10 9 8 7 6 ▲ 4 3 2 1

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

1B
e

Shortened method of **multiplication - 3**

$58,821 \times 21,878 = ?$

		Setting	Carriage/Inverter	Turns	Counter	Product
a x b		Clear	↑		Clear	Clear
1	Set a Gradually develop 21,878 in CR starting with negative turns	5 8 8 2 1 8 7 6 5 4 3 2 1	6 5 4 3 2 1 ▲	2 -	9 9 9 9 9 8 ▲	9 9 9 9 9 8 8 2 3 5 8 11 10 9 8 7 6 5 4 3 2 ▲
2		5 8 8 2 1	2	2 -	9 9 9 9 7 8	9 9 9 9 8 7 0 5 9 3 8
		5 8 8 2 1	3	-	9 9 9 8 7 8	9 9 9 9 2 8 2 3 8 3 8
3	Develop 1 with one zero turn and one positive turn	5 8 8 2 1	4	+	8 7 8	5 1 6 4 4 8 8 8
		5 8 8 2 1	4	+	1 8 7 8	1 1 0 4 6 5 8 3 8
4	Result: 1,286,885,838	5 8 8 2 1	6 5 4 3 2 1 ▲	2 +	2 1 8 7 8 ▲	1 2 8 6 8 8 5 8 3 8 11 10 9 8 7 6 ▲ 4 3 2 1

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

1B
f

Multiplication with multiplicand present in CR.

21,878 x 24 = ?		Setting	Carriage/Inverter	Turns	Counter	Product
a x b		Clear	↓			Clear
1	Live the machine with CR of the previous example Inverter down		5		2 1 8 7 8 ▲	
2	Reduce successively the figures in CR to 0	2 4	6 5 4 3 2 1 ▲	2 +	0 1 8 7 8 ▲	4 8 11 10 9 8 7 6 ▲ 4 3 2 1
		2 4	4	+	0 8 7 8	5 0 4
		2 4	3	8 +	0 7 8	5 2 3 2
3	Result: 525,072	2 4	2	7 +	0 8	5 2 4 8 8
		2 4	6 5 4 3 2 1 ▲	8 +	0 ▲	5 2 5 0 7 2 11 10 9 8 7 6 5 4 3 2 ▲

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

1B
f