

QUINTA PARTE

UNIDAD IV

SISTEMAS DE NUMERACIÓN

OPERACIONES DE
SUMA, RESTA,
MULTIPLICACION Y
DIVISION OCTAL



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OPERACIONES ARITMETICAS SISTEMA OCTAL

SUMA OCTAL

103)

[illegible]

104)

	C3	C2	C1		C1		C2
	1	1					
	1	2	5		12		1
+	4	7	7		-8	1	+2
	6	2	4		4		+7
							10
							-8
							2

Annotations:

- Red arrows:
 - From the red '1' in the C3 column of the first row to the red '1' in the C2 column of the second row.
 - From the red '1' in the C2 column of the second row to the red '1' in the C1 column of the third row.
 - From the red '1' in the C1 column of the third row to the red '1' in the C2 column of the fourth row.
 - From the red '1' in the C2 column of the fourth row to the red '1' in the C1 column of the fifth row.
- Green arrows:
 - From the green '4' in the C1 column of the fifth row to the green '2' in the C2 column of the sixth row.
 - From the green '2' in the C2 column of the sixth row to the green '1' in the C3 column of the seventh row.

➤ 105)

	C5	C4	C3	C2	C1		C1	C2	C3	C4
	1	1	2	2	3		CANT VECES SOBREPASA BASE	CANT VECES SOBREPASA BASE	CANT VECES SOBREPASA BASE	CANT VECES SOBREPASA BASE
	1	3	6	7	3		17	20	11	8
+	4	1	5	7			-8	-8	-8	-8
		2	6	7			9	12	3	0
	1	0	3	4	1		-8	-8		
							1	4		

The diagram illustrates the addition of two numbers in base 10, showing the process of carrying over values. The table displays the numbers being added, the intermediate results, and the final result with carry-over values.

Initial numbers (top row): 1, 3, 6, 7, 3 (under C5, C4, C3, C2, C1 respectively).

Intermediate results (middle row): 1, 3, 6, 7, 3 (under C5, C4, C3, C2, C1 respectively).

Final result (bottom row): 1, 0, 3, 4, 1 (under C5, C4, C3, C2, C1 respectively).

Carry-over values (red numbers): 1, 1, 1, 1, 1 (under C5, C4, C3, C2, C1 respectively).

Carry-over values (green numbers): 1, 4 (under C1, C2 respectively).

➤ 106) $2345 + 174 + 6521$ (BASE 8)

➤ 107) $5006 + 4654 + 6021$ (BASE 8)

➤ 108) $5044 + 7345 + 73341$ (BASE 8)

RESTA OCTAL

➤ 109)

	C3	C2	C1		C1		C2		C3
		-1	+8						
	4	6	5		+8		-1		4
-	2	4	7		+5		+6		-2
	2	1	6		13		5		2
					-7		-4		
					6		1		

The diagram illustrates the borrowing process in octal subtraction. Green curved arrows show the flow of borrowing from higher columns to lower columns. Specifically, an arrow points from the C3 column (value 2) to the C2 column (value 1), and another from the C2 column (value 1) to the C1 column (value 6). Additionally, an arrow points from the C1 column (value 6) to the C2 column (value 1), and another from the C2 column (value 1) to the C3 column (value 2). These arrows indicate the borrowing of 1 from the higher column to the lower column, which is then used to adjust the values in the lower column.

➤ 110)

	C4	C3	C2	C1		C1		C2		C3		C4
		+8										
	-1	-1	+8									
	4	3	2	7		7		+8		+8		-1
-	1	5	4	1		-1		+2		-1		+4
	2	5	6	6	←	6		10		+3		3
								-4		10		-1
								6		-5		2
										5		

➤ 111)

	C6	C5	C4	C3	C2	C1		C1	C2	C3	C4	C5	C6
		+8	-1	-1	+8								
	-1	-1	+8	+8	-1	+8							
	6	3	0	0	4	2		+8	-1	-1	-1	-1	-1
-		7	5	4	6	5		+2	+4	+8	+8	+3	+6
	5	3	2	3	5	5		10	3	+0	+0	2	5
								-5	-6	7	7	-7	
								5	NO SE PUEDE	-4	-5	NO SE PUEDE	
										3	2		
									+8			+8	
									-1			-1	
									+4			+3	
									11			10	
									-6			-7	
									5			3	

➤ 112) $420045 - 56174$ (BASE 8)

➤ 113) $5006 - 1021$ (BASE 8)

➤ 114) $600044 - 303341$ (BASE 8)

MULTIPLICACIÓN OCTAL

115)

	C3	C2	C1		C1	CANT VECES SOBREPASA BASE		C2	CANT VECES SOBREPASA BASE		C3	CANT VECES SOBREPASA BASE
3	1	2										
7	2	5	4X5=	20		4X2=	8		4X7=	28		
	X	4		-8	1		+2			+1		
3	5	2	4	12		10		29				
				-8	2		-8			-8		
				4		2		21		-8		
								13		-8		
								5				

➤ 116)

C4	C3	C2	C1		C1	CANT VECES SOBREPASA BASE		C2	CANT VECES SOBREPASA BASE		C3	CANT VECES SOBREPASA BASE
1	2	1										
3	5	4		$3 \times 4 =$	12		$3 \times 5 =$	15		$3 \times 3 =$	9	
X	2	3			-8	1		+1			+2	
1	3	0	4		4			16			11	
								-8	1		-8	1
								8			3	
								-8	2			
								0				

The diagram illustrates the Rabin-Karp algorithm for finding the pattern '23' in the string '1303'. It shows the calculation of the initial hash for the pattern and the rolling hash for the string, with annotations for the number of times the base is exceeded and the corresponding adjustments to the hash value.

C4	C3	C2	C1	C1 BASE	C2 BASE	C3 BASE	CANT VECES SOBREPASA BASE
3	5	4		2X4=8	2X5=10	2X3=6	
X	2	3		-8	+1	+1	
1	3	0	4	0	11	7	
7	3	0			-8		
1	0	6	0	4	3		

The final result shows the string '1303' matching the pattern '23'.

➤ 117)

C4	C3	C2	C1		C1	CANT VECES SOBREPASA BASE		C2	CANT VECES SOBREPASA BASE		C3	CANT VECES SOBREPASA BASE
2	3	1										
2	4	5	3	$5 \times 3 =$	15		$5 \times 5 =$	25		$5 \times 4 =$	20	
X	X	4	5		-8	1		+1			+3	
2	7	2	7		7			26			23	
								-8	1		-8	1
								18			15	
								-8	2		-8	2
								10			7	
								-8	3			
								2				

The diagram illustrates the selection of a pivot element (4) and the partitioning process. The grid shows the initial array [2, 5, 4, 6, 7] and the pivot selection process. Red arrows show the selection of the pivot (4) and the subsequent partitioning process. Green arrows show the movement of elements less than the pivot to the left and elements greater than the pivot to the right. A blue arrow indicates the final placement of the pivot. The diagram also shows the calculation of the number of elements less than and greater than the pivot, and the resulting sub-arrays.

C4	C3	C2	C1	C1 BASE	C2 BASE	C3 BASE	CANT VECES SOBREPASA BASE
2	4	5	3	12	20	16	7
1	X	4	5	-8	+1	+2	+5
2	7	2	7	4	21	18	12
2	2	5	4	-8	-8	-8	-8
2	5	4	6	7	13	10	4
2	5	4	6	7	-8	-8	-8
2	5	4	6	7	5	2	2

➤ 118) $2430 * 24$ (BASE 8)

➤ 119) $40056 * 35$ (BASE 8)

➤ 120) $3221 * 65$ (BASE 8)

DIVISIÓN OCTAL

➤ 121)

$$\begin{array}{r}
 7 \overset{\curvearrowright}{2} \overset{\curvearrowright}{5} \mid 6 \\
 \hline
 -6 \\
 \hline
 1 \ 2 \\
 -6 \\
 \hline
 0 \ 4 \ 5 \\
 -4 \ 4 \\
 \hline
 0 \ 1
 \end{array}$$

Annotations: A red box contains $1 \ 1 \ 6_{(8)}$. A green arrow points from the 5 in the dividend to the 4 in the divisor. A red arrow points from the 1 in the remainder to the 4 in the divisor.

Num
veces
Resta

3 6	
- 8	1
2 8	
- 8	2
2 0	
- 8	3
1 2	
- 8	4
4	

SOLUCION : <https://youtu.be/GqliRmQVD18>



➤ 122) 3524_4 (BASE 8)

➤ 123) 1304_3 (BASE 8)