

## Decimal a Binario

10

$$10_{(2)} = \underline{1010}_{(2)} = \begin{matrix} 01010 \\ \downarrow \\ \text{bit de signo} \end{matrix}_{(2)}$$

$$\begin{array}{c}
 1369 \\
 16 \quad | \quad 2 \\
 09 \quad | \quad 684 \\
 09 \quad | \quad 08 \quad | \quad 2 \\
 04 \quad | \quad 342 \\
 04 \quad | \quad 14 \quad | \quad 2 \\
 02 \quad | \quad 11 \\
 02 \quad | \quad 11 \quad | \quad 2 \\
 85 \\
 05 \quad | \quad 2 \\
 02 \quad | \quad 42 \\
 02 \quad | \quad 02 \quad | \quad 2 \\
 01 \quad | \quad 21 \\
 01 \quad | \quad 01 \quad | \quad 2 \\
 10 \quad | \quad 2 \\
 05 \quad | \quad 2 \\
 01 \quad | \quad 2 \\
 01 \quad | \quad 01
 \end{array}$$

$$1369_{(10)} = 10101011001_{(2)} = \underline{0}10101011001_{(2)}$$

9234976

1	4	4	2	9	4
0	4	2	1	4	2
0	2	1	2	3	6
0	9	0	1	6	0
1	4	0	7	3	6
(1)	(1)	(1)	(1)	(1)	(1)

Recal

$$\begin{array}{r}
 4589 \\
 05 \\
 10 \\
 09 \\
 (\textcircled{1}) \\
 \hline
 2254 \\
 02 \\
 12 \\
 07 \\
 (\textcircled{1}) \\
 \hline
 1127 \\
 2 \\
 563 \\
 16 \\
 03 \\
 (\textcircled{1}) \\
 \hline
 2 \\
 281 \\
 09 \\
 01 \\
 \hline
 2 \\
 140 \\
 00 \\
 \hline
 2 \\
 70 \\
 10 \\
 \hline
 2 \\
 35 \\
 15 \\
 (\textcircled{1}) \\
 \hline
 2 \\
 17 \\
 7 \\
 \hline
 2 \\
 3 \\
 14 \\
 (\textcircled{1}) \\
 \hline
 2 \\
 2 \\
 1 \\
 \hline
 \end{array}$$

$$9234876_{(10)} = 100011001110100110111100_{(2)}$$

$$= 0100011001110100110111100_{(2)}$$

↓

bit designo

49263749

49263749	2			
09	24631874	2		
12	04	12315937	2	
06	06	03	6157968	
03	03	11	015	2
17	11	15	17	3
14	18	19	19	078984
09	09	13	16	
(1)	14	17	18	
	(0)	(1)	(0)	

$$\begin{array}{r}
 3078984 \\
 10 \\
 07 \\
 18 \\
 09 \\
 18 \\
 04 \\
 0 \\
 \end{array}
 \begin{array}{r}
 2 \\
 1539499 \\
 13 \\
 19 \\
 14 \\
 09 \\
 12 \\
 0 \\
 \end{array}
 \begin{array}{r}
 2 \\
 769746 \\
 16 \\
 09 \\
 17 \\
 14 \\
 06 \\
 0 \\
 \end{array}
 \begin{array}{r}
 2 \\
 384873 \\
 18 \\
 04 \\
 08 \\
 07 \\
 13 \\
 1 \\
 \end{array}
 \begin{array}{r}
 2 \\
 192436 \\
 12 \\
 04 \\
 03 \\
 16 \\
 0 \\
 \end{array}
 \begin{array}{r}
 96218 \\
 \end{array}$$

$$\begin{array}{r}
 96218' \\
 16 \quad | \quad 48104' \\
 02 \quad | \quad 09 \\
 018 \quad | \quad 010 \\
 0 \quad | \quad 09 \\
 \end{array}
 \begin{array}{r}
 24054' \\
 2 \quad | \quad 12027 \\
 04 \quad | \quad 002 \\
 006 \quad | \quad 07 \\
 14 \quad | \quad 0 \\
 \end{array}
 \begin{array}{r}
 6013 \\
 2 \quad | \quad 3006 \\
 0012 \quad | \quad 10 \\
 006 \quad | \quad 0 \\
 \end{array}
 \begin{array}{r}
 1503 \\
 2 \quad | \quad 751 \\
 10 \quad | \quad 15 \\
 03 \quad | \quad 3+5 \\
 1 \quad | \quad 17 \\
 11 \quad | \quad 15 \\
 1 \quad | \quad 07 \\
 1 \quad | \quad 13 \\
 1 \quad | \quad 93 \\
 1 \quad | \quad 46 \\
 06 \quad | \quad 23 \\
 03 \quad | \quad 1 \\
 1 \quad | \quad 5 \\
 1 \quad | \quad 2 \\
 1 \quad | \quad 1 \\
 \end{array}$$

$$\begin{array}{r}
 1503 \\
 2 \quad | \quad 751 \\
 10 \quad | \quad 15 \\
 03 \quad | \quad 3+5 \\
 1 \quad | \quad 17 \\
 11 \quad | \quad 15 \\
 1 \quad | \quad 07 \\
 1 \quad | \quad 13 \\
 1 \quad | \quad 93 \\
 1 \quad | \quad 46 \\
 06 \quad | \quad 23 \\
 03 \quad | \quad 1 \\
 1 \quad | \quad 5 \\
 1 \quad | \quad 2 \\
 1 \quad | \quad 1 \\
 \end{array}$$

$$\begin{aligned}
 49263749_{(2)} &= 1011101111011010010000101_2 \\
 &= 0\downarrow 1011101111011010010000101_2
 \end{aligned}$$

bit del signo

Decimal a binario Usando Complemento de 2

-20

Opción 1 Método (1)

$$\begin{array}{r}
 20 \\
 \frac{0}{128} \quad \frac{0}{64} \quad \frac{0}{32} \quad \frac{1}{16} \quad \frac{0}{8} \quad \frac{1}{4} \quad \frac{0}{2} \quad \frac{0}{1} \\
 \end{array}
 \left. \right) \text{Cambiar } 0 \text{ por } 1$$

Complemento de 1

$$\begin{array}{r}
 20 \\
 \hline
 1 \quad 1 \quad 1 \quad 0 \quad 1 \quad 0 \quad 1 \quad 1 \\
 + 1 \\
 \hline
 \end{array}$$

Complemento de 2

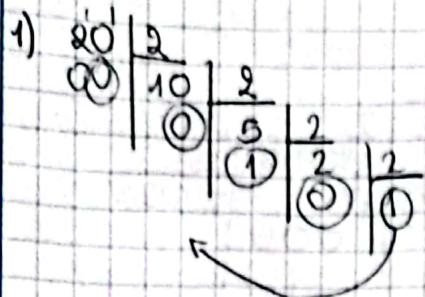
$$\begin{array}{r}
 20+1 \\
 \hline
 1 \quad 1 \quad 1 \quad 0 \quad 1 \quad 1 \quad 0 \quad 0
 \end{array}$$

con 8 bits ↑

#Bits	Rango
8	-127 a 127
16	-32767 a 32767

Real

## Opción 2 (Método 2)



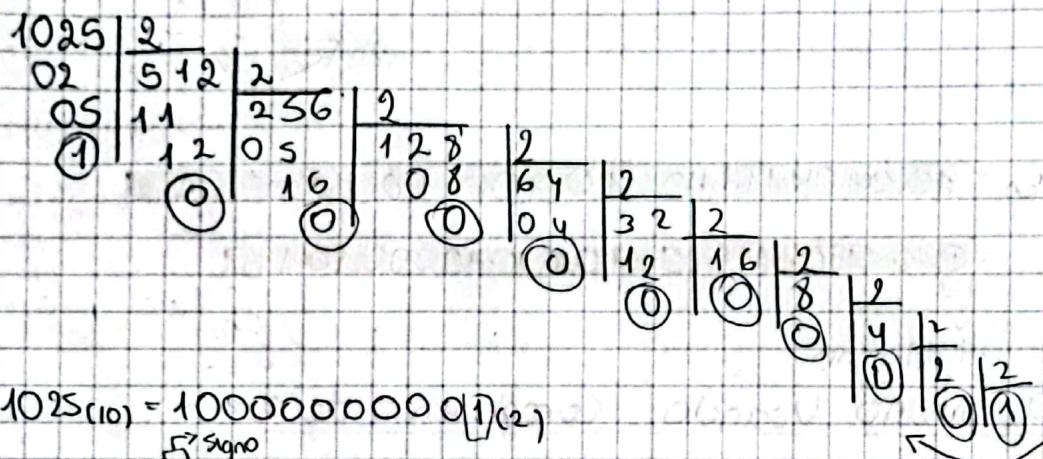
signo

$$20_{(10)} = 1 \ 0 \boxed{1} \ 0 \ 0_{(2)} = \boxed{0} \ 10 \boxed{1} 0 \ 0_{(2)}$$

2) Encontrar el primer 1, reemplazar unos por ceros y ceros por unos

**1011100** → usando el mínimo número de bits  
(con 6 bits)

-1025



$$1025_{(10)} = 100000000001_{(2)}$$

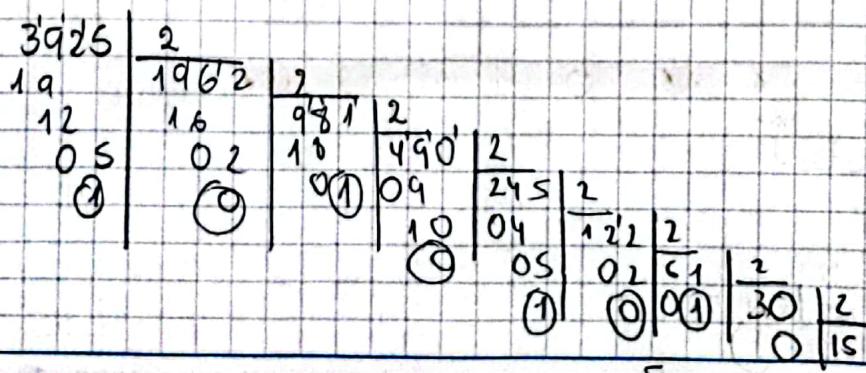
signo

$$= \boxed{0} 10000000001_{(2)}$$

**101111111111**  
(con 12 bits)

-3925

## Método (3)



$$\begin{array}{r} 16 \\ \textcircled{1} \quad | \quad 2 \\ \textcircled{1} \quad | \quad 7 \\ \textcircled{1} \quad | \quad 13 \\ \textcircled{1} \quad | \quad 1 \end{array}$$

$$3925_{(10)} = 11110101010_2 \quad \left. \begin{array}{l} \\ \downarrow \text{Cambiar } 0 \text{ por } 1 \end{array} \right.$$

$$+ \begin{array}{r} 0000101010 \\ \hline 1 \end{array}$$

$$\textcircled{1} 000010101011$$

↓  
signo  
negativo

$$\textcolor{yellow}{1000010101011}$$

$$- 104596$$

Método 3

$$\begin{array}{r} 104596 \\ \textcircled{0} 4 \\ \textcircled{0} 5 \\ \textcircled{1} 9 \\ \textcircled{1} 6 \\ \textcircled{0} \end{array} \left| \begin{array}{r} 2 \\ \textcircled{2} 298 \\ 12 \\ 02 \\ \textcircled{0} 9 \\ \textcircled{1} 1 \end{array} \right| \begin{array}{r} 2 \\ 26149 \\ 06 \\ 014 \\ 09 \\ \textcircled{0} \end{array} \left| \begin{array}{r} 2 \\ 13074 \\ 10 \\ 07 \\ \textcircled{1} 4 \\ \textcircled{0} \end{array} \right| \begin{array}{r} 2 \\ 6537 \\ 05 \\ 13 \\ \textcircled{1} 7 \\ \textcircled{1} \end{array} \left| \begin{array}{r} 2 \\ 3268 \\ 12 \\ 06 \\ 08 \\ \textcircled{0} \end{array} \right| \begin{array}{r} 2 \\ 1634 \\ 03 \\ 14 \\ \textcircled{0} \end{array} \left| \begin{array}{r} 2 \\ 817 \\ \textcircled{0} \end{array} \right. \end{array}$$

$$\begin{array}{r} 817 \\ 017 \\ \textcircled{1} \end{array} \left| \begin{array}{r} 2 \\ 408 \\ 000 \\ \textcircled{0} \end{array} \right| \begin{array}{r} 2 \\ 204 \\ 000 \\ \textcircled{0} \end{array} \left| \begin{array}{r} 2 \\ 102 \\ 00 \\ \textcircled{0} \end{array} \right| \begin{array}{r} 2 \\ 51 \\ 11 \\ \textcircled{1} \end{array} \left| \begin{array}{r} 2 \\ 25 \\ 05 \\ \textcircled{1} \end{array} \right| \begin{array}{r} 2 \\ 11 \\ 06 \\ \textcircled{0} \end{array} \left| \begin{array}{r} 2 \\ 6 \\ 3 \\ \textcircled{1} \end{array} \right| \begin{array}{r} 2 \\ 2 \\ \textcircled{1} \end{array} \right. \end{math>$$

$$104596_{(10)} = 11001100010010100_2 \quad \left. \begin{array}{l} \\ \downarrow \text{Cambiar } 0 \text{ por } 1 \end{array} \right.$$

$$001100111011011011$$

$$\begin{array}{r}
 + 00110011101101011 \\
 \hline
 100110011101101100
 \end{array}$$

↓  
signo

100110011101101100

Unsigned binario a hexadecimal

110011110101011001101101100000101001

Método corto

1100 1111 0101 0110 0110 1110 1101 1000 0010 1001  
 C F 5 6 6 E D 8 2 9

Método largo

$$\begin{aligned}
 & 1 \times 2^{37} + 1 \times 2^{36} + 0 \cancel{\times 2^{35}} + 0 \cancel{\times 2^{34}} + 1 \times 2^{33} + 1 \times 2^{32} + 1 \times 2^{31} + \\
 & 0 \cancel{\times 2^{30}} + 1 \times 2^{29} + 0 \cancel{\times 2^{28}} + 1 \times 2^{27} + 0 \cancel{\times 2^{26}} + 1 \times 2^{25} + 1 \times 2^{24} + 0 \cancel{\times 2^{23}} + \\
 & 0 \cancel{\times 2^{22}} + 1 \times 2^{21} + 1 \times 2^{20} + 0 \cancel{\times 2^{19}} + 1 \times 2^{18} + 1 \times 2^{17} + 0 \cancel{\times 2^{16}} + \\
 & 1 \times 2^{15} + 1 \times 2^{14} + 0 \cancel{\times 2^{13}} + 1 \times 2^{12} + 1 \times 2^{11} + 0 \cancel{\times 2^{10}} + 0 \cancel{\times 2^9} + \\
 & 0 \cancel{\times 2^8} + 0 \cancel{\times 2^7} + 0 \cancel{\times 2^6} + 1 \times 2^5 + 0 \cancel{\times 2^4} + 1 \times 2^3 + 0 \cancel{\times 2^2} + \\
 & 0 \cancel{\times 2^1} + 1 \times 2^0 = 890508335145
 \end{aligned}$$

890508335145		16	16	16
90	55'65'677'09'46'	34	5'4'8'18'4'	2
105	76	027	041	1
090	125	110	098	0
101	136	065	024	
123	089	048	08	
115	077	018		
0151	130			
071	029			
105	134			
09	066			
	02			

91409261	16	16	16	16	16	16
057	13588098	078	8491254	019	33098	3317
094	148	040	0125	050	029	0113
140	071	078	131	118	06	207
129	(13)	(14)	06	06	(6)	(15)
0126						
141						

CF566FD8 29

1000 0111 1000 1110 0011 1000 1110 000 11 1111 0011

Método corto

1000 0111 1000 1110 0011 1000 1110 0011 1111 0011  
 8      7      8      F      3      8      E      3      F      3

Método largo

$$\begin{aligned}
 & 1 \times 2^{39} + 0 \times 2^{38} + 0 \times 2^{37} + 0 \times 2^{36} + 0 \times 2^{35} + 1 \times 2^{34} + 1 \times 2^{33} + 1 \times 2^{32} \\
 & 1 \times 2^{31} + 0 \times 2^{30} + 0 \times 2^{29} + 0 \times 2^{28} + 1 \times 2^{27} + 1 \times 2^{26} + 1 \times 2^{25} + 0 \times 2^{24} + \\
 & 0 \times 2^{23} + 0 \times 2^{22} + 1 \times 2^{21} + 1 \times 2^{20} + 1 \times 2^{19} + 0 \times 2^{18} + 0 \times 2^{17} + 0 \times 2^{16} + \\
 & 1 \times 2^{15} + 1 \times 2^{14} + 1 \times 2^{13} + 0 \times 2^{12} + 0 \times 2^{11} + 0 \times 2^{10} + 1 \times 2^9 + 1 \times 2^8 + \\
 & 1 \times 2^7 + 1 \times 2^6 + 1 \times 2^5 + 1 \times 2^4 + 0 \times 2^3 + 0 \times 2^2 + 1 \times 2^1 + 1 \times 2^0
 \end{aligned}$$

5821206678003	16	16	16	16
102	36387917375	043	2274244835	142140302
062	118	067	069	
140	039	071	071	
126	041	077	064	
146	060	133	0048	
617	120	057	0035	
118	083	045	(3)	
	(3)			

M21N0302

141	16
134	8883768
060	088
123	083
110	037
142	056
(14)	088

16

555235

025

112

0035

(3)

16

34702

027

110

142

(14)

16

21561

056

081

(8)

16

133

001

16

(8)

878E 38E3F3

1010110101011000110010101000101010101010

$$4 \times 10 = 40$$

Método Largo

1) binario a decimal

$$\begin{aligned} & 1 \times 2^{39} + 0 \times 2^{38} + 1 \times 2^{37} + 0 \times 2^{36} + 1 \times 2^{35} + 1 \times 2^{34} + 0 \times 2^{33} + 1 \times 2^{32} + \\ & 0 \times 2^{31} + 1 \times 2^{30} + 0 \times 2^{29} + 1 \times 2^{28} + 1 \times 2^{27} + 1 \times 2^{26} + 0 \times 2^{25} + \\ & 0 \times 2^{24} + 0 \times 2^{23} + 1 \times 2^{22} + 1 \times 2^{21} + 0 \times 2^{20} + 0 \times 2^{19} + 1 \times 2^{18} + \\ & 0 \times 2^{17} + 1 \times 2^{16} + 0 \times 2^{15} + 1 \times 2^{14} + 0 \times 2^{13} + 0 \times 2^{12} + 1 \times 2^{11} + \\ & 0 \times 2^{10} + 1 \times 2^9 + 0 \times 2^8 + 1 \times 2^7 + 0 \times 2^6 + 1 \times 2^5 + 0 \times 2^4 + 1 \times 2^3 + \\ & 0 \times 2^2 + 1 \times 2^1 + 0 \times 2^0 \end{aligned}$$

$$\begin{aligned} & \frac{2^{39} + 2^{37} + 2^{35} + 2^{34} + 2^{32} + 2^{30} + 2^{28} + 2^{27} + 2^{26} + 2^{22} + 2^{21} +}{2^{18} + 2^{16} + 2^{14} + 2^{11} + 2^8 + 2^7 + 2^5 + 2^3 + 2^1} = \\ & 2^{22} [2^8 + 2^{15} + 2^{13} + 2^{12} + 2^{10} + 2^8 + 2^6 + 2^5 + 2^4 + 1] + \\ & 1 \cdot 2^9 [2^9 + 2^7 + 2^5 + 2^2 + 1] + 2^3 [2^4 + 2^2 + 1] + 2^1 = \end{aligned}$$

744579484330<sub>(10)</sub> → Decimal

2) decimal a hexadecimal

744579484330	16	46536217770	16	2908513610	16	181382100	16	11361381
104		145		130		21		
85		136		28		57		
57		82		125		98		
99		21		131		22		
34		57		33		61		
98		97		16		130		
114		10		910		20		
123								
113								
10								

Real

$\frac{11361381}{16}$	$\frac{710086}{16}$	$\frac{44330}{16}$	$\frac{2743}{16}$	$\frac{173}{16}$
16 0138 101 ⑤	16 70 60 128 ⑥	16 123 118 60 12 ⑦	16 2743 117 63 3 ⑧	16 173 10 ⑨

AD5C654AAA

Método largo

1010 1101 0101 1100 0110 0101 0100 1010 1010 1010  
 A D S C 6 S H A A A A

1010 0010 1010 1010 1010 1010 1011 1111 1100.0000

Método corto

1010 0010 1010 1010 1010 1010 1011 1111 1100 0000  
 A 2 A A A A B F C O

Método largo

$$\begin{aligned}
 & 1 \times 2^{39} + 0 \cancel{\times 2^{38}} + 1 \times 2^{37} + 0 \cancel{\times 2^{36}} + 0 \cancel{\times 2^{35}} + 0 \cancel{\times 2^{34}} + 1 \times 2^{33} + \\
 & 0 \cancel{\times 2^{32}} + 1 \times 2^{31} + 0 \cancel{\times 2^{30}} + 1 \times 2^{29} + 0 \cancel{\times 2^{28}} + 1 \times 2^{27} + 0 \cancel{\times 2^{26}} + \\
 & 1 \times 2^{25} + 0 \cancel{\times 2^{24}} + 1 \times 2^{23} + 0 \cancel{\times 2^{22}} + 1 \times 2^{21} + \\
 & 0 \cancel{\times 2^{20}} + 1 \times 2^{19} + 0 \cancel{\times 2^{18}} + 1 \times 2^{17} + 0 \cancel{\times 2^{16}} + \\
 & 1 \times 2^{15} + 0 \cancel{\times 2^{14}} + 1 \times 2^{13} + 1 \times 2^{12} + 1 \times 2^{11} + \\
 & 1 \times 2^{10} + 1 \times 2^9 + 1 \times 2^8 + 1 \times 2^7 + 1 \times 2^6 + \\
 & 0 \cancel{\times 2^5} + 0 \cancel{\times 2^4} + 0 \cancel{\times 2^3} + 0 \cancel{\times 2^2} + 0 \cancel{\times 2^1} + 0 \cancel{\times 2^0} \\
 & 698648019880
 \end{aligned}$$

69564801880 | 16  
 58  
 106  
 104  
 58  
 80  
 13  
 28  
 128  
 00

13665501180 | 16  
 116  
 46  
 145  
 150  
 61  
 131  
 31  
 60  
 (12)

16  
 2719093823  
 112  
 090  
 100  
 133  
 53  
 102  
 63  
 (15)

16  
 1+056363 | 16  
 105  
 96  
 083  
 36  
 43  
 (11)

10660522 | 16  
 106  
 6661282  
 100  
 26  
 102  
 68  
 132  
 42  
 (10) | (19)

16  
 41642 | 16  
 96  
 042  
 (10) | 2602  
 100  
 42  
 (10) | 02  
 (10)



A 2 A AAA B F C O

Signed binario a octal

1111 1100 0001 1111 0000 0001 1101 0101

Método corto

7 7 0 1 7 4 0 1 6 5 3

Método largo

1) binario a decimal

$$\begin{aligned}
 & 1 \times 2^{32} + 1 \times 2^{31} + 1 \times 2^{30} + 1 \times 2^{29} + 1 \times 2^{28} + 1 \times 2^{27} + 0 \times 2^{26} + 0 \times 2^{25} + 0 \times 2^{24} + \\
 & 0 \times 2^{23} + 0 \times 2^{22} + 1 \times 2^{21} + 1 \times 2^{20} + 1 \times 2^{19} + 1 \times 2^{18} + 1 \times 2^{17} + 0 \times 2^{16} + 0 \times 2^{15} + \\
 & 0 \times 2^{14} + 0 \times 2^{13} + 0 \times 2^{12} + 0 \times 2^{11} + 0 \times 2^{10} + 1 \times 2^9 + 1 \times 2^8 + 1 \times 2^7 + 1 \times 2^6 + \\
 & 0 \times 2^5 + 1 \times 2^4 + 0 \times 2^3 + 1 \times 2^2 + 0 \times 2^1 + 1 \times 2^0 = \\
 & 845971035
 \end{aligned}$$

2) decimal a octal

8489781035  
 45  
 59  
 37  
 58  
 21  
 50  
 23  
 75  
 (3)

8  
 1031172629  
 25  
 17  
 14  
 67  
 32  
 062  
 69  
 (5)

8  
 132184078  
 52  
 41  
 13  
 24  
 076  
 (6)

8  
 16513009  
 052  
 43  
 30  
 60  
 49  
 (1)

8  
 2065376  
 485  
 13  
 57  
 16  
 (0)

$$\begin{array}{r}
 238472 \quad | \quad 8 \\
 18 \quad | \quad 31271 \quad | \quad 8 \\
 21 \quad | \quad 027 \quad | \quad 4033 \quad | \quad 8 \\
 57 \quad | \quad 31 \quad | \quad 033 \quad | \quad 0 \\
 12 \quad | \quad (4) \quad | \quad (1) \quad | \quad 0 \\
 \end{array}$$

↓

-77017401653

01010101010111111111111100000000

Método corto

+ 2 5 2 5 7 7 7 7 6 0 0

Método largo

$$\begin{aligned}
 & 0 \times 2^{36} + 1 \times 2^{35} + 0 \times 2^{34} + 1 \times 2^{33} + 0 \times 2^{32} + 1 \times 2^{31} + 0 \times 2^{30} + 1 \times 2^{29} + 0 \times 2^{28} + \\
 & 1 \times 2^{27} + 0 \times 2^{26} + 1 \times 2^{25} + 0 \times 2^{24} + 1 \times 2^{23} + 1 \times 2^{22} + 1 \times 2^{21} + 1 \times 2^{20} + \\
 & 1 \times 2^{19} + 1 \times 2^{18} + 1 \times 2^{17} + 1 \times 2^{16} + 1 \times 2^{15} + 1 \times 2^{14} + 1 \times 2^{13} + 1 \times 2^{12} + 1 \times 2^{11} + \\
 & 1 \times 2^{10} + 1 \times 2^9 + 1 \times 2^8 + 0 \times 2^7 + 0 \times 2^6 + 0 \times 2^5 + 0 \times 2^4 + 0 \times 2^3 + 0 \times 2^2 + \\
 & 0 \times 2^1 + 0 \times 2^0 = 22917676929
 \end{aligned}$$

$$\begin{array}{c|c|c|c|c}
 2291111111111111 & 8 & 2364109616 & 8 & 339089702 & 8 \\
 69 & 46 & 64 & 38 & 44761087 & 8 \\
 51 & 090 & 61 & 60 & 47 & 5595135 & 8 \\
 37 & 56 & 16 & 48 & 76 & 79 & 699391 \\
 55 & 10 & 16 & 10 & 41 & 75 & \\
 076 & 56 & 16 & 62 & 10 & 31 & \\
 49 & 10 & 16 & 62 & 29 & 73 & \\
 12 & 49 & 16 & 62 & 41 & 15 & \\
 \textcircled{1} & \textcircled{1} & \textcircled{1} & \textcircled{1} & \textcircled{1} & \textcircled{1} & \\
 \end{array}$$

$$\begin{array}{c|c|c|c|c|c}
 699391 & 8 & 87423 & 8 & 10927 & 8 \\
 59 & 74 & 22 & 24 & 13651 & 8 \\
 33 & 63 & 63 & 52 & 56 & 130 \\
 19 & \textcircled{9} & \textcircled{9} & 47 & \textcircled{5} & 10 \\
 31 & & & & & \textcircled{1} \\
 \textcircled{7} & & & \textcircled{7} & & \\
 \end{array}$$

↓

**252 577777 + 600**

1110001110000001111111100000101010

Método corto

- 161601774052

Método largo

$$\begin{aligned}
 & 1 \times 2^{32} + 1 \times 2^{31} + 1 \times 2^{20} + 0 \times 2^{19} + 0 \times 2^{18} + 0 \times 2^{17} + 1 \times 2^{16} + 1 \times 2^{23} + 1 \times 2^{24} \\
 & 0 \times 2^{22} + 0 \times 2^{21} + 0 \times 2^{10} + 0 \times 2^{11} + 0 \times 2^{12} + 0 \times 2^{13} + 1 \times 2^{14} + 1 \times 2^{15} + \\
 & 1 \times 2^{15} + 1 \times 2^9 + 1 \times 2^{11} + 1 \times 2^{12} + 1 \times 2^{13} + 1 \times 2^{14} + 1 \times 2^{15} + 0 \times 2^{16} + \\
 & 0 \times 2^{17} + 0 \times 2^{18} + 0 \times 2^{19} + 0 \times 2^{20} + 1 \times 2^4 + 0 \times 2^3 + 1 \times 2^2 + 1 \times 2^1 + \\
 & 1 \times 2^0 + 0 \times 2^5 = 15267758842
 \end{aligned}$$

1526778842

22	67	37	56	28	19	04	2
----	----	----	----	----	----	----	---

6

1906778805	30	68	44	43	73	16	05
------------	----	----	----	----	----	----	----

127359100	71	65	15	34	12	30	00
-----------	----	----	----	----	----	----	----

1344900	51	21	39	39	70	68	01
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1	3727487	1	3727487	1	3727487	1	3727487
---	---------	---	---------	---	---------	---	---------

372748771

51

13

71

47

23

03

4659559

65

19

33

15

09

01

8

27741

22

67

09

01

1

7230

09

01

1

210

11

32

09

01

1

113

32

09

01

1

113

32

09

01

1

113

32

09

01

-161601374052

1010101010100000010101010101010111000

Método corto

1 2 5 2 4 0 5 2 5 3 + 0

Método largo

$$\begin{aligned}
 & 1 \times 2^{33} + 0 \times 2^{32} + 1 \times 2^{31} + 0 \times 2^{30} + 1 \times 2^{29} + 0 \times 2^{28} + 1 \times 2^{27} + 0 \times 2^{26} + \\
 & 1 \times 2^{25} + 0 \times 2^{24} + 1 \times 2^{23} + 0 \times 2^{22} + 0 \times 2^{21} + 0 \times 2^{20} + 0 \times 2^{19} + 0 \times 2^{18} + 0 \times 2^{17} \\
 & 2^7 - (1)4^4 \times 2^{12} - 1 \times 2^{11} + 2 \times 10^4 + 1 \times 2^3 + 0 \times 2^2 + 1 \times 2^1 + 0 \times 2^0 + 1 \times 2^9 + \\
 & 0 \times 2^8 + 1 \times 2^7 + 1 \times 2^6 + 1 \times 2^5 + 1 \times 2^4 + 1 \times 2^3 + 0 \times 2^2 + 0 \times 2^1 = 0 \times 2^9
 \end{aligned}$$

11450624360

1 1 4 5 0 6 2 4 3 6 0	8 4 3 1 3 2 1 0 9 5	8 7 8 9 1 6 0 9 1	8	
3 4	6 3	1 6	2 2 3 6 4 0 0 1	1 8
2 5	7 3	2 9	6 3	2 7 9 5 5 6 2 8
1 6	1 2	3 1	7 6	
2 6	4 1	3 6	4 4	
1 2	0 4	4 0	0	
6 4	1 5	1 1	5 0	
8 6	(1)	(3)	(5)	
4 0				-

2 7 9 5 5 6 2	1			
3 9	3 4 9 9 9 5	8		
7 5	2 9	4 3 6 1 0	1	
3 5	5 4	3 6	5 1 6 0	8
3 6	6 4	4 1	6 6	
4 2	(3)	0 0	2 0	6 9 2
(2)			(4)	4 2
				7 5 1 8
				(5) (3) (7) 8

1 2 5 2 4 0 5 2 3 3 7 0

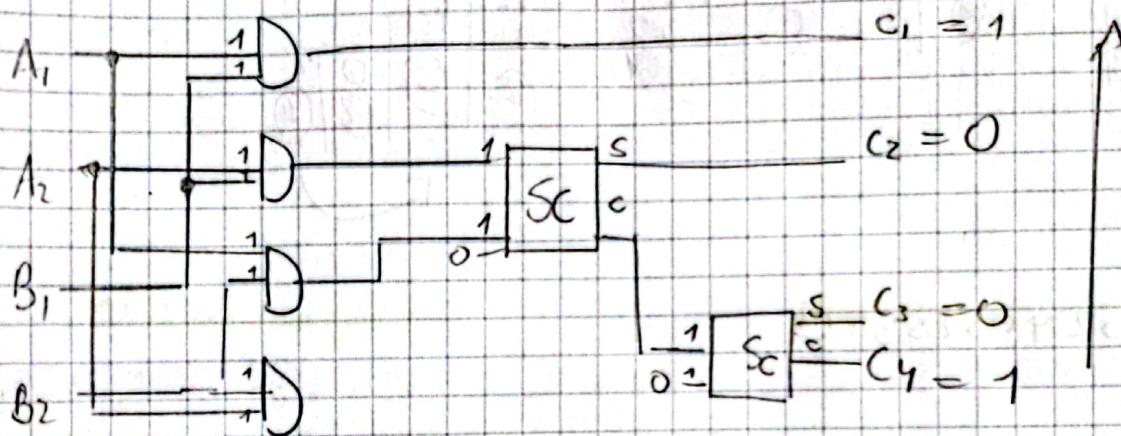
Multiplication of two binary numbers of length 2 bits

Ejercicio resuelto con el video de CristianMonterroso  
Multiplicador binario de 2 bits

A	B	A·B
0	0	0
0	1	0
1	0	0
1	1	1

$$\begin{array}{r}
 10 \leftarrow A \\
 11 \leftarrow B \\
 \hline
 0 \cdot 10 \\
 1 \cdot 0 \\
 \hline
 10
 \end{array}$$

$$\begin{array}{r}
 11 \\
 11 \\
 111 \\
 \hline
 1001
 \end{array}$$



Complemento de 2 for binary number length 3 bits

Ejercicio resuelto con un video de youtube de Kavith V.

x y z	A B C
0 0 0	0 0 0
0 0 1	1 1 1
0 1 0	1 1 0
0 1 1	1 0 1
1 0 0	1 0 0
1 0 1	0 1 1
1 1 0	0 1 0
1 1 1	0 0 1

