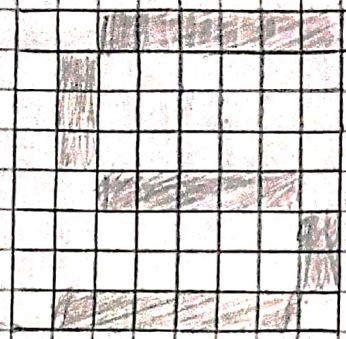
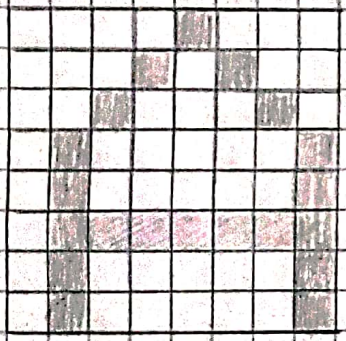
Santiago Runceria Ortiz 10.10.38.275

Taller Introducción a la Informática

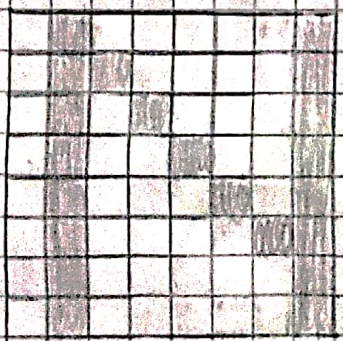
Representación Binaria



Binario	Hexadecimal
00111111	3F
01000000	40
01000000	40
01000000	40
00111110	3E
00000001	01
00000001	01
01111110	7F



00001000	08
00010100	14
00100010	22
01000001	41
01000001	41
01111111	7F
01000001	41
01000001	41

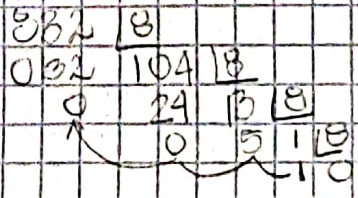


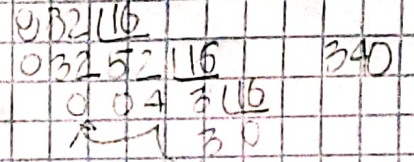
01000001	41
01100001	61
01010001	51
01001001	49
01000101	45
01000011	43
01000001	41
01000001	41

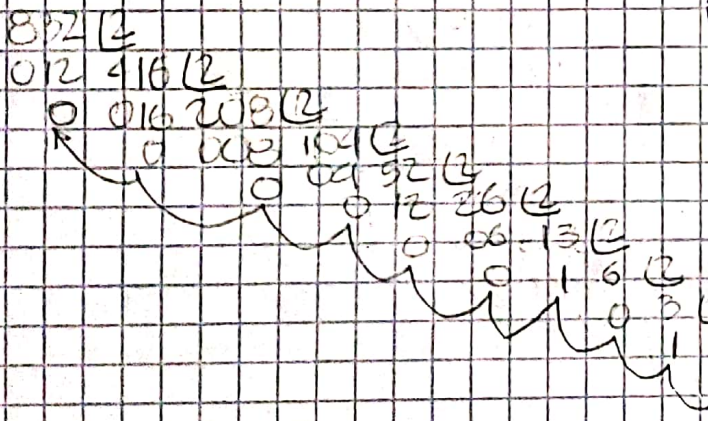
Cambio de Base

DATO	Base 10	Base 8	Base 2	Base 16
832_{10}	—	$(1500)_8$	$(1101000000)_2$	$(340)_{16}$
471_8	$(313)_{10}$	—	$(100111001)_2$	$(191)_{16}$
11101001_2	$(233)_{10}$	$(351)_8$	—	$(E9)_{16}$
$F7_{16}$	$(247)_{10}$	$(367)_8$	$(11110111)_2$	—

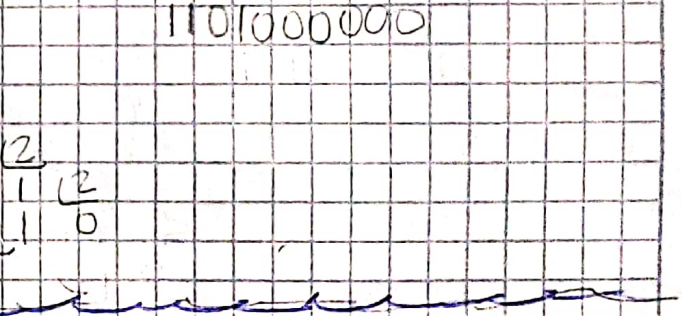
OPERACIONES

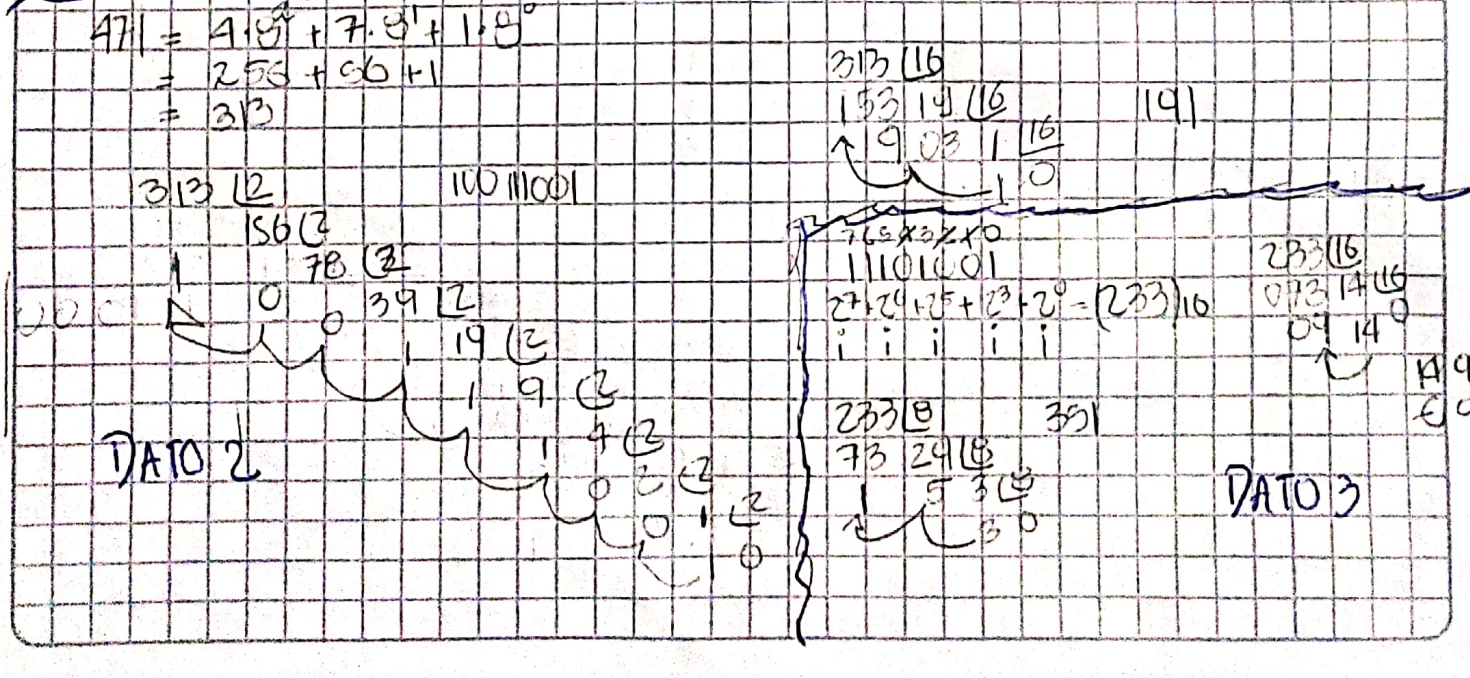






DATO 1





DATO 2

DATO 3

$F7_{16} \rightarrow F\cdot 16^1 + 7\cdot 16^0$

$15 \quad 7$

$= 15\cdot 16^1 + 7\cdot 16^0$

$= 240 + 7$

$= 247$

15 | 2 → 7 | 2 → 3 | 2 → 1 | 2 → 1 0

7 | 2 → 3 | 2 → 1 | 2 → 1 0

1111 0111

Para completar los grupos de 4

DATO 4

247 | 8 → 30 | 8 → 3 | 8 → 3 0

07 6 3

Procesos Distintos

Para completar los grupos de 3: 011 110 111

3 6 7

Suma y Multiplicación Binaria

① $832_{10} = (1101000000)_2$

* $+74_{10}$ = 74 | 2 → 37 | 2 → 18 | 2 → 9 | 2 → 4 | 2 → 2 | 2 → 1 | 2 → 1 0 $= (1001010)_2$

```
   1101000000
 +    1001010
 ------------
   1110001010
```

* $\times 25_8 = 2\cdot 8 + 5\cdot 1$ $= 16 + 5 = (21)_{10}$ $= (10101)_2$

21 | 2 → 10 | 2 → 5 | 2 → 2 | 2 → 1 | 2 → 1 0

```
       1101000000
 ×          10101
 ----------------
       1101000000
 +    0000000000
     1101000000
    0000000000
   1101000000
 ----------------
   100010001000000
```

* $-110_2 = (0110)_2$

```
   1101000000
 + 1111111010
 ------------
  11100111010
```

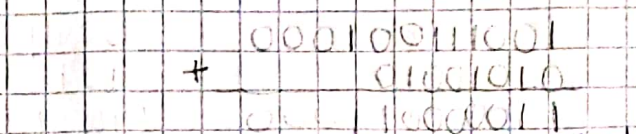
0110 → 1001 + 1 = 1010

* $+A2_{16} = (10100010)_2$

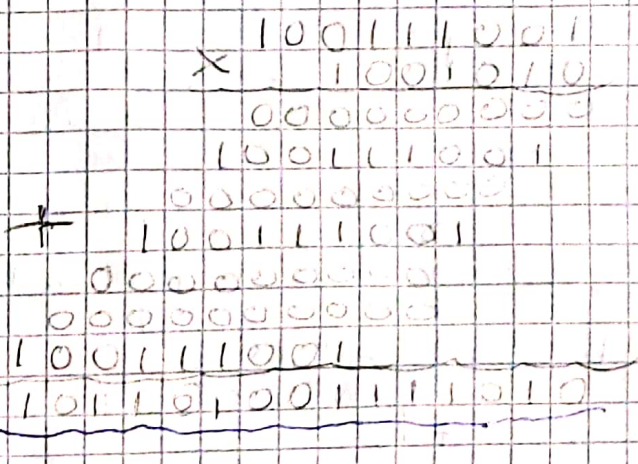
```
   1101000000
 +   10100010
 ------------
   1111100010
```

② 471₈ = (100111001)₂

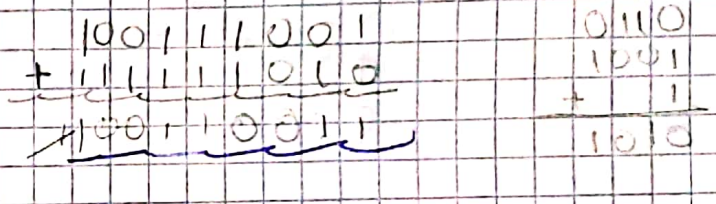
* +79₁₀ = (1001010)₂



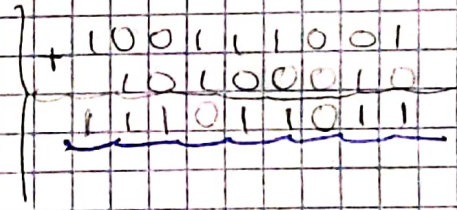
* ×25₈ = (10101)₂



* −11₀₂ = (0110)₂

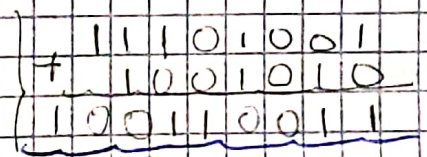


* +A2₁₆ = (10100010)₂

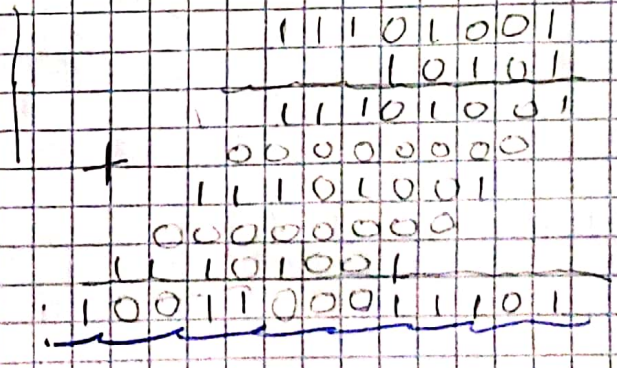


③ 11101001₂

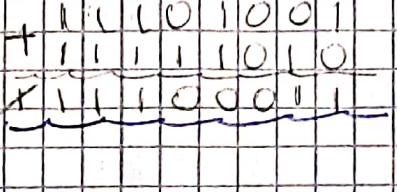
* +79₁₀ = (1001010)₂



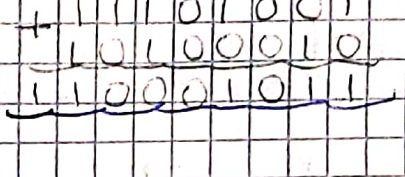
* ×25₈ = (10101)₂



* $-110_2 = (0110)_2$

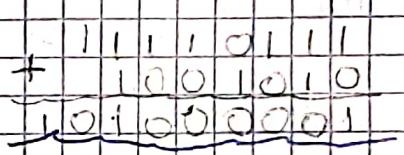


* $A2_{16} = (10100010)_2$

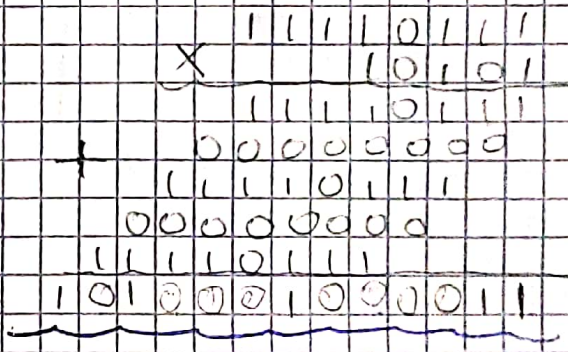


④ $F7_{16} = (11110111)_2$

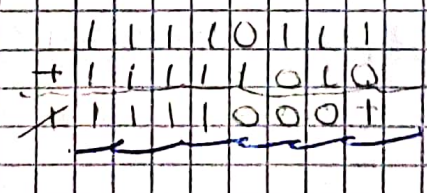
* $7A_{16} = (01111010)_2$



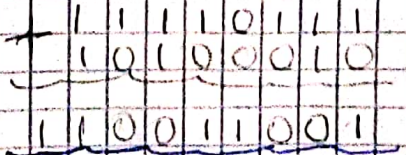
* $25_8 = (10101)_2$



* $-110_2 = (0110)_2$



* $A2_{16} = (10100010)_2$



DATO	74_{10}	25_8	110_2	A_{16}
832_{10}	1110001010	1000100010000000	1110011101010	111100010
47_8	11000011	101101001111010	100110011	111011011
11101001_2	100110011	1001100011101	11100011	110000101
$F7_{16}$	1010000001	101000100000111	11110001	110011001

Punto Flotante en Base Dos

$(35.21)_{10} \rightarrow$ 35 | 2 → 1, 17 | 2 → 1, 8 | 2 → 0, 4 | 2 → 0, 2 | 2 → 0, 1 | 2 → 1, 0

$(100011.0011010)_2$

$= 1{,}00011001010 \times 2^5$

Signo = 0 (positivo)

Exponente = 5 → 101

5 | 2 → 1, 2 | 2 → 0, 1 | 2 → 1, 0

Mantisa = ,00011001010

0 | 0 0 0 1 1 | 1 0 1 — Representación en 8 bits

↓ Signo ↓ mantisa ↓ Exponente

$(-135.01)_{10} \rightarrow (-10000111.00000011)_2$

$= -1{,}000011100000011 \times 2^7$

Signo = 1 (negativo)

Exponente = 7 → 111

7 | 2 → 1, 3 | 2 → 1, 1 | 2 → 1, 0

Mantisa = ,00001110000000011

1 | 0 0 0 0 1 | 1 1 1 — Representación en 8 bits

↓ signo ↓ mantisa ↓ exponente