



1)

512	256	128	64	32	16	8	4	2	1
						1	1	1	0
		1	0	0	0	0	0	1	0
		0	1	1	0	1	1	0	1
1	0	0	1	0	0	0	0	1	0

$\rightarrow 14_{(10)} = 110_{(2)}$   
 $\rightarrow 130_{(10)} = 10000010_{(2)}$

$$\begin{array}{r} 0,59375 \\ \times 2 \\ \hline 1,18750 \end{array} \quad \downarrow 1$$

$$\begin{array}{r} 0,1875 \\ 0,1875 \\ \hline 0,3750 \end{array}$$

$$\begin{array}{r} 0,375 \\ 0,375 \\ \hline 0,750 \end{array}$$

$$0,1875 \times 2 = 0,375 \downarrow 0$$

$$0,375 \times 2 = 0,75 \downarrow 0$$

$$0,75 \times 2 = 1,5 \downarrow 1$$

$$0,5 \times 2 = 1 \downarrow 1$$

$$0,59375_{(10)} = 0,1001_{(2)}$$

d'où  $14,59375 = 110,1001_{(2)}$   
 $= 1,101001 \cdot 2^3$

$$e = E - 127 = 3 \Rightarrow E = 127 + 3 = 130$$

2)  $E = (0 \times 128) + (1 \times 64) + (1 \times 32) + (8) + (4) + 1$

$$E = 64 + \underbrace{32+8}_{40} + 4 + 1 = 109 ; e = E - 127 \Rightarrow e = 109 - 127$$

$$\Rightarrow e = -18 ; M = (0 \times 2^{-1}) + (0 \times 2^{-2}) + (1 \times 2^{-3}) + (1 \times 2^{-4})$$

$$= 2^{-3} + 2^{-4} = 0,125 + 0,0625 = 0,1875$$

3) Conversion de 578 en base (2) voir tableau de 1)

$$578 = 1001000010_{(2)}$$

$$\begin{array}{r} 4) \quad 1001000 \\ + \quad 1 \\ \hline 1001001 \\ + \quad 1 \\ \hline 1001011 \\ + \quad 1 \\ \hline 1001010 \\ + \quad 1 \\ \hline 1001110 \end{array}$$

5)

7	1
0	0
1	0
2	0
3	0
4	0
5	0
6	0
7	1
8	1
9	1
10	1

$$\begin{array}{r} 543_{(7)} \\ 236_{(7)} \\ \hline 1112_{(7)} \\ \times 34_{(7)} \\ \hline 3302 \\ 2324 \cdot \\ \hline 32042 \end{array}$$

5	1
0	0
1	0
2	0
3	0
4	0
5	1
6	1
7	1
8	1
9	1
10	2
11	2
12	2

(NB : preuve obligatoire et calculatrice non autorisée)

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2212,112<sub>(3)</sub> / 21<sub>(3)</sub> = ..... (3) *XD*

21A1<sub>(h)</sub> - 38E<sub>(h)</sub> = ..... 1E13 ..... (h) *✓*

-6) 6530 (o) = ..... D58 ..... (h) (1pt) *✓*

-7) 233 (6) = ..... 1011101 ..... (b) (1,5pts) *✓*

-8) 32313121 (4) = ..... EDD9 ..... (h) (1pt) *✓*

-9) 568, 25 (d) = ..... 2344,13 ..... (6) (2pts)

-10) 112122, 112 (3) = ..... 478,46 ..... (9) (3pts)

*he correspond pas à la preuve XD*

- 11) Sur 8 bits chercher le complément à 2 (b-C2) de : (1pt)  
+X = 10001101, recherchez -X(b-C2) = ..... 01110011 ..... *✓*

$$\begin{array}{r} 21A1 \\ - 38E \\ \hline 1E13 \end{array}$$

$$6) 6 | 5 | 3 | 0 = 10 | 10 | 10 | 000 \\ \text{M0} | \text{101} | \text{011} | \text{000} = \text{M0} | \text{10} | \text{10} | \text{1000} \\ \text{D} | 5 | 8$$

$$7) 233_6 = (2 \times 6^2) + (3 \times 6) + (3 \times 1) \\ = (2 \times 36) + (18) + 3 \\ = 72 + 21 = 93_{(10)}$$

64	32	16	8	4	2	1
1	0	1	1	1	0	1

 $\rightarrow 93_{(10)}$

$$93_{(10)} = 1011101$$

$$8) 3 | 2 | 3 | 1 | 3 | 1 | 2 | 1 \\ 11 | 10 | 11 | 01 | 11 | 01 | 10 | 01 \\ E | D | D | 9$$

$$112122, M2 = 395, 407_{(10)}$$

$$11) \begin{array}{r} 10001101 \\ 01110010 \\ \hline 11110011 \end{array}$$

32	16	8	4	2	1
4	8	16	32	64	128

$$9) \begin{array}{r} 216 | 36 | 6 | 1 \\ 2 | 3 | 4 | 4 \end{array}$$

$$0,25 \times 6 = 1,5 \rightarrow 1$$

$$0,5 \times 6 = 3 \rightarrow 3$$

$$10) 243 | 81 | 27 | 9 | 3 \\ 112122_{(3)} = 243 + 81 + (2 \times 27) + 9 + 6 + 2 \\ = 243 + 90 + 8 + 54 = 395_{(10)}$$

$$0,112_{(3)} = \left(\frac{1}{3} + \frac{1}{9}\right) + \frac{1}{27} = \left(\frac{9+3}{27}\right) + \frac{1}{27} = \frac{13}{27} = 0,407_{(10)}$$

Base 10

16	1
0	0
1	0
2	0
3	0
4	0
5	0
6	0
7	0
8	0
9	0
10	0
11	0
12	0
13	0
14	0
15	0
16	1
17	1
18	1
19	1
20	1

8	4	2	1
0	0	0	0
1	0	0	0
2	0	0	0
3	0	0	0
4	0	1	0
5	0	1	0
6	0	1	0
7	0	1	0
8	1	0	0
9	1	0	0
10	A	1	0
11	B	1	0
12	C	1	0
13	D	1	0
14	E	1	0
15	F	1	0

9	1	1
8	0	8
9	1	0
10	1	1
11	1	2

$$568_{(10)} = 2344_{(6)}$$

$$568,25_{(10)} = 2344,13_{(6)}$$

$$\begin{array}{r} 243 \\ 90 \\ 8 \\ 54 \\ \hline 395 \end{array}$$