

EXERCICES DE REVISIONS

Sur la Numération

A). Conversions :

I). Base 10 – Base 2 :

$29_{(10)}$; $1971_{(10)}$; $899_{(10)}$; $127,75_{(10)}$

II). Base 2 – Base 10 :

$0101011_{(2)}$; $0111011_{(2)}$; $1100110_{(2)}$; $01110,11_{(2)}$

III). Base 10 – Base 16 :

$29_{(10)}$; $1971_{(10)}$; $899_{(10)}$; $127,75_{(10)}$

IV). Base 16 – Base 10 :

$4B9_{(16)}$; $FFF_{(16)}$; $14B8_{(16)}$; $14B,8_{(16)}$

B). Opérations :

I). Additions :

1°). En binaire :

100100	10101010	100111
+ 011101	+ 11011011	+ 100101
	+ 11101110	+ 001101
		+ 110000
		+ 111111

2°). En BCD :

18	265	999
+ 5	+ 975	+ 199
		+ 999

3°). En Base 16 :

19	3DE	1BD
+ B9	+ 4AC	+ 789
		+ DEF

II). Soustractions :

1°). En binaire :

$$\begin{array}{r} 1010 \\ - 0111 \\ \hline \end{array} \quad \begin{array}{r} 01000110 \\ - 00111001 \\ \hline \end{array} \quad \begin{array}{r} 10111111 \\ - 00001011 \\ - 10010101 \\ \hline \end{array}$$

2°). En Base 16 :

$$\begin{array}{r} ABC \\ - 9AD \\ \hline \end{array} \quad \begin{array}{r} EDF \\ - DF3 \\ \hline \end{array} \quad \begin{array}{r} AE7F \\ - 1F4C \\ - 3D64 \\ \hline \end{array}$$

III). Multiplications :

1°). En binaire :

$$\begin{array}{r} 1011 \\ * 1101 \\ \hline \end{array} \quad \begin{array}{r} 11011 \\ * 01001 \\ \hline \end{array} \quad \begin{array}{r} 10010111 \\ * 11111111 \\ \hline \end{array}$$

2°). En Base 16 :

$$\begin{array}{r} 2A \\ * 1E \\ \hline \end{array} \quad \begin{array}{r} A3F \\ * E68 \\ \hline \end{array} \quad \begin{array}{r} A9B1 \\ * F310 \\ \hline \end{array}$$

IV). Divisions :

1°). En binaire :

$$\begin{array}{r|l} 100011 & 111 \\ \hline & \\ \hline \end{array} \quad \begin{array}{r|l} 1110101 & 1101 \\ \hline & \\ \hline \end{array} \quad \begin{array}{r|l} 101100111 & 1100 \\ \hline & \\ \hline \end{array}$$

C). Conversions diverses :

$1234_{(10)}$	=	(16)
$2115_{(10)}$	=	(8)
$214.42_{(10)}$	=	(4)
$512.5_{(10)}$	=	(8)
$138.145_{(10)}$	=	(2)
$754_{(8)}$	=	(10)
$A9F_{(16)}$	=	(10)
$234_{(5)}$	=	(7)
$451_{(6)}$	=	(8)
$3FE_{(16)}$	=	(4)
$312.3_{(4)}$	=	(8)
$517_{(8)}$	=	(16)
$11001.01_{(2)}$	=	(16)

<p>CORRIGE des</p> <p>EXERCICES DE REVISIONS</p> <p>Sur la Numération</p>
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A). Conversions :

I). Base 10 – Base 2 :

29₍₁₀₎ ; 1971₍₁₀₎ ; 899₍₁₀₎ ; 127,75₍₁₀₎
 11101₍₂₎ ; 11110110011₍₂₎ ; 1110000011₍₂₎ ; 1111111,11₍₂₎

II). Base 2 – Base 10 :

0101011₍₂₎ ; 0111011₍₂₎ ; 1100110₍₂₎ ; 01110,11₍₂₎
 43₍₁₀₎ ; 59₍₁₀₎ ; 102₍₁₀₎ ; 14,75₍₁₀₎

III). Base 10 – Base 16 :

29₍₁₀₎ ; 1971₍₁₀₎ ; 899₍₁₀₎ ; 127,75₍₁₀₎
 1D₍₁₆₎ ; 7B3₍₁₆₎ ; 383₍₁₆₎ ; 7F,C₍₁₆₎

IV). Base 16 – Base 10 :

4B9₍₁₆₎ ; FFF₍₁₆₎ ; 14B8₍₁₆₎ ; 14B,8₍₁₆₎
 1209₍₁₀₎ ; 4095₍₁₀₎ ; 5304₍₁₀₎ ; 331,5₍₁₀₎

B). Opérations :

I). Additions :

1*). En binaire :

100100	10101010	100111
+ 011101	+ 11011011	+ 100101
1000001	+ 11101110	+ 001101
	1001110011	+ 110000
		+ 111111
		11001000

2*). En BCD :

18	0001 1000
+ 5	+ 0000 0101
23	0001 1101
	+ 0110
	0010 0011

$$\begin{array}{r} 265 \\ + 975 \\ \hline 1240 \end{array}$$

$$\begin{array}{r} 0010 \\ + 1001 \\ \hline 1011 \end{array} \quad \begin{array}{r} 0110 \\ 0111 \\ \hline 1101 \end{array} \quad \begin{array}{r} 0101 \\ 0101 \\ \hline 1010 \\ + 0110 \\ \hline 0000 \end{array}$$

$$\begin{array}{r} 1100 \\ + 0110 \\ \hline 0100 \end{array}$$

$$\begin{array}{r} 1 \\ 0001 \\ \hline 0001 \end{array} \quad \begin{array}{r} 0010 \\ \hline 0010 \end{array} \quad \begin{array}{r} 0100 \\ \hline 0100 \end{array} \quad \begin{array}{r} 0000 \\ \hline 0000 \end{array}$$

$$\begin{array}{cccc} 1 & & & \\ \hline 1 & 2 & 4 & 0 \end{array}$$

$$\begin{array}{r} 999 \\ + 199 \\ + 999 \\ \hline 2197 \end{array}$$

$$\begin{array}{r} 1001 \\ + 0001 \\ + 1001 \\ \hline 1001 \\ 1 \\ \hline 1011 \\ + 0110 \\ \hline 0001 \end{array} \quad \begin{array}{r} 1001 \\ 1001 \\ \hline 1001 \\ 1 \\ \hline 1101 \\ + 0110 \\ \hline 0011 \\ + 0110 \\ \hline 1001 \end{array} \quad \begin{array}{r} 1001 \\ 1001 \\ \hline 1001 \\ 1 \\ \hline 1101 \\ + 0110 \\ \hline 0111 \end{array}$$

$$\begin{array}{r} 1 \\ 0101 \\ + 0110 \\ \hline 1011 \\ + 0110 \\ \hline 0001 \end{array}$$

$$\begin{array}{r} 1 \\ 0010 \\ \hline 0010 \end{array}$$

$$\begin{array}{cccc} 0010 & 0001 & 1001 & 0111 \\ \hline 2 & 1 & 9 & 7 \end{array}$$

3*). En Base 16 :

$$\begin{array}{r} 19 \\ + B9 \\ \hline D2 \end{array}$$

$$\begin{array}{r} 3DE \\ + 4AC \\ \hline 88A \end{array}$$

$$\begin{array}{r} 1BD \\ + 789 \\ + DEF \\ \hline 1735 \end{array}$$

II). Soustractions :

1*). En binaire :

$$\begin{array}{r} 1010 \\ - 0111 \\ \hline 0011 \end{array} \quad \begin{array}{r} 01000110 \\ - 00111001 \\ \hline 00001101 \end{array} \quad \begin{array}{r} 10111111 \\ - 00001011 \\ - 10010101 \\ \hline 00011111 \end{array}$$

2*). En Base 16 :

$$\begin{array}{r} ABC \\ - 9AD \\ \hline 10F \end{array}$$

$$\begin{array}{r} EDF \\ - DF3 \\ \hline 0EC \end{array}$$

$$\begin{array}{r} AE7F \\ - 1F4C \\ - 3D64 \\ \hline 51CF \end{array}$$

III). Multiplications :

1°). En binaire :

$\begin{array}{r} 1011 \\ * 1101 \\ \hline 1011 \\ 1011.. \\ 1011... \\ \hline 10001111 \end{array}$	$\begin{array}{r} 11011 \\ * 01001 \\ \hline 11011 \\ 11011... \\ 11110011 \\ \hline \end{array}$	$\begin{array}{r} 10010111 \\ * 11111111 \\ \hline 10010111 \\ 10010111. \\ 10010111.. \\ 10010111... \\ 10010111.... \\ 10010111..... \\ 10010111..... \\ 10010111..... \\ 10010111..... \\ 10010111..... \\ \hline 1001011001101001 \end{array}$
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2°). En Base 16 :

$\begin{array}{r} 2A \\ * 1E \\ \hline 24C \\ \underline{2A} \\ 4EC \end{array}$	$\begin{array}{r} A3F \\ * E68 \\ \hline 51F8 \\ 3D7A \\ \underline{8F72} \\ 939B98 \end{array}$	$\begin{array}{r} A9B1 \\ * F310 \\ \hline 0000 \\ A9B1 \\ \underline{1FD13} \\ 9F15F... \\ \hline A11D9E10 \end{array}$
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IV). Divisions :

1°). En binaire :

$\begin{array}{r l} 100011 & 111 \\ - 111 & 101 \\ \hline 000111 & \\ - 111 & \\ \hline 0 & \end{array}$	$\begin{array}{r l} 1110101 & 1101 \\ - 1101 & 1001 \\ \hline 0001101 & \\ - 1101 & \\ \hline 0 & \end{array}$	$\begin{array}{r l} 101100111 & 1100 \\ - 1100 & 11101 \\ \hline 010100 & \\ - 1100 & \\ \hline 010001 & \\ - 1100 & \\ \hline 0010111 & \\ - 1100 & \\ \hline 01011 & \end{array}$
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C). Conversions diverses :

1234 ₍₁₀₎	=	4D2 ₍₁₆₎
2115 ₍₁₀₎	=	4103 ₍₈₎
214,42 ₍₁₀₎	=	3112,2 ₍₄₎
512,5 ₍₁₀₎	=	1000,4 ₍₈₎
138,145 ₍₁₀₎	=	10001010,00100101 ₍₂₎
754 ₍₈₎	=	492 ₍₁₀₎
A9F ₍₁₆₎	=	2719 ₍₁₀₎
234 ₍₅₎	=	126 ₍₇₎
451 ₍₆₎	=	257 ₍₈₎
3FE ₍₁₆₎	=	33332 ₍₄₎
312,3 ₍₄₎	=	66,6 ₍₈₎
517 ₍₈₎	=	14F ₍₁₆₎
11001,01 ₍₂₎	=	19,4 ₍₁₆₎