Lista de Exercícios 01 - Conversão de uma base qualquer para decimal (respostas)

1) Converter para decimal (ternário -> decimal):

2102_3 = 2x3^3 + 1x3^2 + 0x3^1 + 2x3^0
= 2x27 + 1x9 + 0x3 + 2x1
= 54 + 9 + 0 + 2
= 65

212121_3 = 2x3^5 + 1x3^4 + 2x3^3 + 1x3^2 +2x3^1 +1x3^0
= 2x243 + 1x81 + 2x27 + 1x9 +2x3 + 1x1
= 486 + 81 + 54 + 9 + 6 + 1
= 637

222_3 = 2x3^2 + 2x3^1 + 2x3^0
= 2x9 + 2x3 + 2x1
= 18 + 6 + 2
= 26

1000_3 = 1x3^3 = 1x27 = 27

2222_3 = 2x27 + 2x9+ 2x3 + 2x1 = 54+18+6+2 = 80

10000_3 = 1x3^4 = 1x81 = 81

100000_3 = 1x3^5 = 1x243 = 243

Resumo (todas questões base 3):

Base ^Exp	3^5	3^4	3^3	3^2	3^1	3^0	**Cálculo**	**Resp.**
Potência	**243**	**81**	**27**	**9**	**3**	**1**		
Exerc. 1			2	1	0	2	2x27+1x9+0x3+2x1	65
Exerc. 2	2	1	2	1	2	1	2x243+1x81+2x27+ 1x9+2x3+1x1	637
Exerc. 3				2	2	2	2x9+2x3+2x1	26
Exerc. 4			1	0	0	0	1x27	27
Exerc. 5			2	2	2	2	2x27+2x9+2x3+2x1	80
Exerc. 6		1	0	0	0	0	1x81	81
Exerc. 7	1	0	0	0	0	0	1x243	243

Converter para decimal (octal -> decimal):

12035_8 = 1x8^4 + 2x8^3 + 0x8^2 + 3x8^1 + 5x8^0
= 1x4096 + 2x512 + 0x64 + 3x8 + 5x1
= 4096 + 1024 + 0 + 24 + 5
= 5149

2746_8 = 2x8^3 + 7x8^2 + 4x8^1 + 6x8^0
= 2x512 + 7x64 + 4x8 + 6x1
= 1024 + 448 + 32 + 6
= 1510

37_8 = 3x8^1 + 7x8^0
= 3x8 + 7x1
= 24 + 7
= 31

116_8 = 1x64 + 1x8 + 6x1
= 64 + 8 + 6 = 78

2537_8 = 2x512 + 5x64 + 3x8 + 7x1
= 1024 + 320 + 24 + 7 = 1375
777_8 = 7x64 + 7x8 + 7x1 = 448 + 56 + 7 = 511
1000_8 = 1x8^3 = 1x512 = 512
10000_8 = 1x8^4 = 1x4096 = 4096

Resumo (todas questões base 8):

Base^Exp	**8^5**	**8^4**	**8^3**	**8^2**	**8^1**	**8^0**	**Cálculo**	**Resp.**
Potência	**32768**	**4096**	**512**	**64**	**8**	**1**		
Exerc. 1		1	2	0	3	5	1x4096+2x512+0x64+3x8+5x1	5149
Exerc. 2			2	7	4	6	2x512+7x64+4x8+6x1	1510
Exerc. 3					3	7	3x8+7x1	31
Exerc. 4				1	1	6	1x64+1x8+6x1	78
Exerc. 5			2	5	3	7	2x512+5x64+3x8+7x1	1375
Exerc. 6				7	7	7	7x64 + 7x8 + 7x1	511
Exerc. 7			1	0	0	0	1x512	512
Exerc. 8		1	0	0	0	0	1x4096	4096

Converter para decimal (binário -> decimal):

110101_2 = 1x2^5 + 1x2^4 +0x2^3 +1x2^2 +0x2^1 +1x2^0
= 1x32 + 1x16 +0x8 +1x4 +0x2 +1x1
= 32 + 16 +0 +4 +0 +1
= 53

11111_2 = 16 + 8 + 4 + 2 + 1 = 31

101011_2 = 32 + 8 + 2 + 1 = 43

111111_2 = 32 + 16 + 8 + 4 + 2 + 1 = 63

1000000_2 = 64

1000001_2 = 64 + 1 = 65

1000011_2 = 64 + 2 + 1 = 67

Resumo (todas questões base 2):

Base^Exp	**2^6**	**2^5**	**2^4**	**2^3**	**2^2**	**2^1**	**2^0**	**Cálculo**	**Resp.**
Potência	**64**	**32**	**16**	**8**	**4**	**2**	**1**		
Exerc. 1		1	1	0	1	0	1	32+16+4+1	53
Exerc. 2			1	1	1	1	1	16+8+4+2+1	31
Exerc. 3		1	0	1	0	1	1	32+8+2+1	43
Exerc. 4		1	1	1	1	1	1	32+16+8+4+2+1	63
Exerc. 5	1	0	0	0	0	0	0	64	64
Exerc. 6	1	0	0	0	0	0	1	64+1	65
Exerc. 7	1	0	0	0	0	1	1	64+2+1	67

Converter para decimal (hexadecimal -> decimal):

$A8D_{16}$ = Ax16^2 + 8x16^1 + Dx16^0
= 10x256 + 8x16 + 13x1
= 2560 + 128 + 13
= 2701

$AB5C_{16}$ = Ax16^3 + Bx16^2 + 5x16^1 + Cx16^0
= 10x4096 + 11x256 + 5x16 + 12x1
= 40960 + 2816 + 80 + 12
= 43868

$2E_{16}$ = 2x16 + Ex1 = 32 + 14x1 = 32 + 14 = 46

$2F_{16}$ = 2x16 + Fx1 = 32 + 15x1 = 32 + 15 = 47

30_{16} = 3x16 + 0x1 = 48 + 0 = 48

31_{16} = 3x16 + 1x1 = 48 + 1 = 49

$F2D_{16}$ = 15x256 + 2x16 + 13 = 3840+32+13 = 3885

$B3AC_{16}$ = Bx16^3 + 3x16^2 + Ax16^1 + Cx16^0
= 11x4096 + 3x256 + 10x16 + 12x1
= 45056 + 768 + 160 + 12
= 45996

FF_{16} = 15x16 + 15 = 240+15 = 255

100_{16} = 1x16^2 = 1x256 = 256

FFF_{16} = 15x256 + 15x16 + 15 = 3840+240+15 = 4095

1000_{16} = 1x16^3 = 1x4096 = 4096

Resumo (todas questões base 16):

Base^Exp	**16^5**	**16^4**	**16^3**	**16^2**	**16^1**	**16^0**	**Cálculo**	**Resp.**
Potência			**4096**	**256**	**16**	**1**		
Exerc. 1				A	8	D	10x256+8x16+13x1	2701
Exerc. 2			A	B	5	C	10x4096+11x256+5x16 +12x1	43868
Exerc. 3					2	E	2x16+14x1	46
Exerc. 4					2	F	2x16+15x1	47
Exerc. 5					3	0	3x16	48
Exerc. 6					3	1	3x16+1x1	49
Exerc. 7				F	2	D	15x256+2x16+13x1	3885
Exerc. 8			B	3	A	C	11x4096+3x256+10x16+12x1	45996
Exerc. 9					F	F	15x16+15x1	255
Exerc. 10				1	0	0	1x256	256
Exerc. 11				F	F	F	15x256+15x16+15x1	4095
Exerc. 12			1	0	0	0	1x4096	4096