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CPE C103 - 102G

Practice Problems

	Binary	Octal	Decimal	Hexa decimal
1.	10111011_2	273_8	187_{10}	BB_{16}
2.	$1010\ 11111_2$	537_8	351_{10}	$15F_{16}$
3.	$100\ 100\ 001_2$	441_8	289_{10}	121_{16}
4.	$1011\ 1010\ 1011\ 1110_2$	$135\ 276_8$	47806_{10}	$BABE_{16}$

Binary Solutions

5 3 7 8
4 2 1 | 4 2 1 | 4 2 1
101 011 111 $_2$

2 | 289 - 288 r. 1
2 | 144 - 144 r. 0
2 | 72 - 72 r. 0
2 | 36 - 36 r. 0
2 | 18 - 18 r. 0
2 | 9 - 8 r. 1
2 | 4 - 4 r. 0
2 | 2 - 2 r. 0
2 | 01 - 0 r. 1
0

$100\ 100\ 001_2$

BABE 16
(B) (A) (B) (E)
11 10 11 14
8421 8421 8421 8421
1011 1010 1011 1110 $_2$

Octal Solutions

1011 1011
010 | 111 | 011
4 2 1 | 4 2 1 | 4 2 1
2 7 3 $_8$

8 | 289 - 288 = 1
8 | 36 - 32 = 4
8 | 4 - 0 = 4
0

441_8

B(11) A(10) B(11) E(14)
8 4 2 1 | 8 4 2 1 | 8 4 2 1 | 8 4 2 1
1 0 1 1 | 1 0 1 0 | 1 0 1 1 | 1 1 1 0
001 011 101 010 111 110
421 421 421 421 421 421
1 3 5 2 7 6

135276_8

Decimal solutions

1011 1011

$1 \times 2^0 = 1$
$1 \times 2^1 = 2$
$0 \times 2^2 = 0$
$1 \times 2^3 = 8$
$1 \times 2^4 = 16$
$1 \times 2^5 = 32$
$0 \times 2^6 = 0$
$1 \times 2^7 = 128$

$10111011_2 = 187_{10}$

537_8

$7 \times 8^0 = 7$
$3 \times 8^1 = 24$
$5 \times 8^2 = 320$

$537_8 = 351_{10}$

B A B E

$14 \times 16^0 = 14$
$11 \times 16^1 = 176$
$10 \times 16^2 = 2560$
$11 \times 16^3 = 45056$

$BABE_{16} = 47806_{10}$

Hexa Decimal solutions

1011 1011
8421 8421
11 11
B B $_{16}$

537

5 3 7
421 421 421
101 011 111
84 21 8421

1 5 15(F)

$15F_{16}$

16 | 289 - 288 = 1
16 | 18 - 16 = 2
16 | 1 - 0 = 1
0

121_{10}