

Wed 7 Nov 2018

# REVIEW

$$527_{10} = 100001111_2$$

10 9 8 7 6 5 4 3 2 1 0

$$00000001 = 1$$

$$00000011 = 3 \quad 2^8 = 256$$

$$00000111 = 7 \quad 2^9 = 512$$

$$00001111 = 15 \quad 2^{10} = 1024$$

$$00011111 = 31$$

$$00111111 = 63$$

$$2^4 = 16$$

$$2^5 = 32$$

$$2^7 = 128$$

$$2^{10} - 1 = 1023$$

Write the binary expression of

$$a) 2^4 - 1 = 00001111 = 15$$

$$b) 2^5 - 1 = 00011111 = 31$$

$$c) 2^7 - 1 = 01111111 = 127$$

Write the following binary #'s  
in Hexadecimal

a) 0000 0111 = 7 <sub>1d</sub> =  $\backslash x 7$

b) 0001 0000 = 16 <sub>1d</sub> =  $\backslash x 10$

c) 0001 0110 = 22 <sub>1d</sub> =  $\backslash x 16$

d) 1011 0110 1111 =  $\backslash x$  B 6 F

Shortcut for going  
from binary to Hex.

Base 2: <sup>bits</sup> 0, 1

Base 10: 0, 1, 2, ..., 9

Base 16: 0, 1, 2, ..., "15"  
0, 1, 2, ..., 9, A, B, C,  
D, E, F

Write these hexadecimal #'s in decimal

$$a) \text{ } \overset{1}{\text{x}}\overset{0}{1}3 = 1 \cdot 16^1 + 3 \cdot 16^0 = 16 + 3 = 19$$

$$b) \text{ } \text{x}33 = 3 \cdot 16^1 + 3 \cdot 16^0 = 48 + 3 = 51$$

$$c) \text{ } \overset{2}{\text{x}}\overset{1}{A}\overset{0}{A}A = 10 \cdot 16^2 + 10 \cdot 16^1 + 10 \cdot 16^0 =$$
$$= 10 \cdot 256 + 160 + 10 =$$
$$= 2560 + 170 =$$
$$= 2730$$

$\downarrow \quad \downarrow \quad \downarrow$   
 $16^2 \quad 16^1 \quad 16^0$   
 $256 \quad 16 \quad 1$

$$3 = 1 \cdot 2 \cdot 2 \cdot 2$$

$$13^4 = 1 \cdot 13 \cdot 13 \cdot 13 \cdot 13$$

$$27^0 = 1$$

$$137^0 = 1$$

$$59^1 = 1 \cdot 59 = 59$$