

Data Representation Help Sheet

BINARY TO DENARY

00011010

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

$$16 + 8 + 2 = 26$$

DENARY TO BINARY

27

16	8	4	2	1
1	1	0	1	1

DATA UNITS

Abb.	b	n	B	KB	MB	GB	TB	PB
Name	bit	nibble	byte	kilobyte	megabyte	gigabyte	terabyte	Petabyte
Size	1 or 0	4 bits	8 bits	1000 bytes	1000 KB	1000 MB	1000 GB	1000 TB
Eg.	-	-	character	txt file	mp3 file	DVD	Wikipedia	BBC iplayer

BINARY ADDITION

$0 + 0 = 0$
 $0 + 1 = 1$
 $1 + 1 = 0$ (carry 1)
 $1 + 1 + 1 = 1$ (carry 1)

$$\begin{array}{r}
 1001 \\
 0100 \\
 \hline
 1101
 \end{array}
 \quad
 \begin{array}{r}
 \overset{1}{1001} \\
 0001 \\
 \hline
 1010
 \end{array}
 \quad
 \begin{array}{r}
 \overset{111}{0111} \\
 0111 \\
 \hline
 1110
 \end{array}$$

BINARY SHIFTS (base2)

0111
 $\times 2$ 011100 (left) $\leftarrow$
 $\div 2$ 000111 (right) $\rightarrow$

HEXADECIMAL TO DENARY

3A

16s	Remainder
3	A
$3 \times 16 = 48$	10
$48 + 10 = 58$	

DENARY TO HEXADECIMAL

How many times does 16 go into 28? $\rightarrow$ 28 $\leftarrow$ How many left over?

16s	Remainder
1	12
Hex = 1	Hex = C
1C	

HEXADECIMAL TO BINARY

3 | A

 0011 | 1010

This makes 3 in binary This makes 10 in binary

BINARY TO HEXADECIMAL

0011 | 1010

 3 | A

This makes 3 in hex This makes A in hex

0
1
2
3
4
5
6
7
8
9
A
B
C
D
E
F