



Teams

Ed

Campuswire

Piazza

Canvas discussion

Digits

everything $\Rightarrow$ 0s and 1s in computer

$\sim$ everything is
ink & paper
in literature

0 1 2 3 4 5 6 7 8 9 $\leftarrow$ ^{Base} ten digit

↑↑
.....

2 0 2 6

Place - value
Positional

thousand	hundred	ten	one
2	0	2	6
ten^3	ten^2	ten^1	ten^0

algorithm al - Khwarizmi

Steps to do a task
 Unambiguous

10: 100

2: 4

1: 1, 5, 4, 3, 2, 1, 0

0 0 0 0 0 0
 1 1 1 1 1 1

1 1 1 ↓
 129830
 51372
 +
 181202

	0	1	2	3	4	5	6	7	8	9
0	0	1	2							
1		2								
2					7					
3								10		
4									12	
5										
6										
7										
8										
9										

ten²
 base²

digits: 0 1

2^4	2^3	2^2	2^1	2^0
1	1	0	1	0
16	8	4	2	1

$$16 + 8 + \quad \quad 2 \quad \quad = 26$$

base -2

binary

0

1

$$2 + 1 = 3$$

$$6 + 0 = 6$$

$$12 + 1 = 13$$



1 1 0 1

8 4 2 1

$$8 + 4 + 1 = 13$$

	to	ten		
1	5	five	0	}
0	2	two	1	
1	1	one	0	
0	0	zero	1	

1010

Fifteen

15

7

1

3

1

1

1

0

1

Bit = Binary digit

1 D 1 B 6
 0011101000110110

Base 16

Hexadecimal → 1D1B6

Hex

313,144,201,389,210
 1000^4 1000^3 1000^2 1000^1 1000^0

Bytes : 8 bits
 2 hex digits

0000	0
0001	1
0010	2
0011	3
0100	4
0101	5
0110	6
0111	7
1000	8
1001	9
1010	A a
1011	B b
1100	C c
1101	D d
1110	E e
1111	F f