

BASE
10

10^3 10^2 10^1 10^0
(4 2 3 3)₁₀

$$4 \times 10^3 = 4 \times 1000 = 4000$$

$$2 \times 10^2 = 2 \times 100 = 200$$

$$3 \times 10^1 = 3 \times 10 = 30$$

$$3 \times 10^0 = 3 \times 1 = 3$$

$$4233$$

0
1
2
3
4
5
6
7
8
9

$$0+1=1$$

$$1+1=2$$

$$2+1=3$$

$$3+1=4$$

$$4+1=5$$

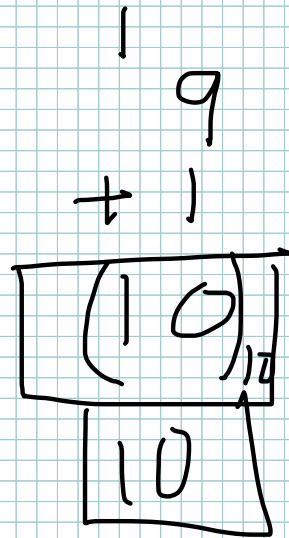
$$5+1=6$$

$$6+1=\cancel{7}$$

$$7+1=8$$

$$8+1=9$$

$$9+1 \neq 0$$



BASE
5

$$\left(\begin{array}{cccc} 5^3 & 5^2 & 5^1 & 5^0 \\ 4 & 2 & 3 & 3 \end{array} \right)_5$$

0
1
2
3
4

$$5^0 = 1 \quad 5^1 = 5 \quad 5^2 = 25 \quad 5^3 = 125$$

$$4 \times 5^3 = 4 \times 125 = 500$$

$$2 \times 5^2 = 2 \times 25 = 50$$

$$3 \times 5^1 = 3 \times 5 = 15$$

$$3 \times 5^0 = 3 \times 1 = 3$$

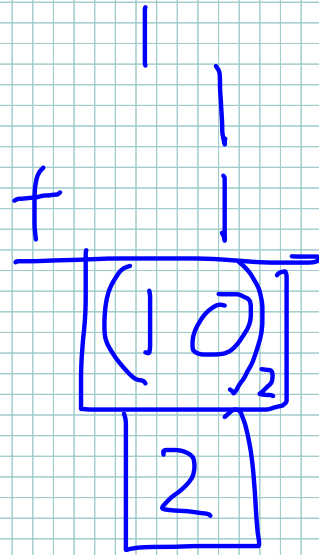
$$(568)_{10}$$

$$\left(\begin{array}{cccc|cccc} 2^7 & 2^6 & 2^5 & 2^4 & 2^3 & 2^2 & 2^1 & 2^0 & & \\ 1 & 0 & 0 & 1 & 0 & 1 & 1 & 0 & & \\ 128 & 64 & 32 & 16 & 8 & 4 & 2 & 1 & & \end{array} \right)_2 \quad \begin{array}{c} 0 \\ 1 \end{array}$$

$$\begin{array}{r} 1 \times 2^7 = 1 \times 128 = 128 \\ 0 \times 2^6 = 0 \times 64 = 0 \\ 0 \times 2^5 = 0 \times 32 = 0 \\ 1 \times 2^4 = 1 \times 16 = 16 \\ 0 \times 2^3 = 0 \times 8 = 0 \\ 1 \times 2^2 = 1 \times 4 = 4 \\ 1 \times 2^1 = 1 \times 2 = 2 \\ 0 \times 2^0 = 0 \times 1 = 0 \end{array} = \boxed{(150)_{10}}$$

$$0+1=1$$

$$1+1=$$



0	0	0	0	0
1	0	0	0	1
2	0	0	1	0
3	0	0	1	1
4	0	1	0	0
5	0	1	0	1
6	0	1	1	0
7	0	1	1	1

$$\begin{array}{r}
 + 0000 \\
 \hline
 0001 \\
 + 1 \\
 \hline
 0010 \\
 + 1 \\
 \hline
 0011 \\
 + 1 \\
 \hline
 0100 \\
 + 1 \\
 \hline
 0101 \\
 + 1 \\
 \hline
 0110 \\
 + 1 \\
 \hline
 0111
 \end{array}$$

8	1	0	0	0
9	1	0	0	1
10	1	0	1	0
11	1	0	1	1
12	1	1	0	0
13	1	1	0	1
14	1	1	1	0
15	1	1	1	1

1	1	1	1	1
+				
<hr/>				
1	0	0	0	0

1	1	1	0
+			
<hr/>			
1	1	1	1

1	1	1	1	1
+				
<hr/>				
1	0	0	0	0
+				
<hr/>				
1	0	0	1	1
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<hr/>				
1	0	1	1	1
+				
<hr/>				
1	1	0	0	1
+				
<hr/>				
1	1	0	1	1
+				
<hr/>				
1	1	1	0	1

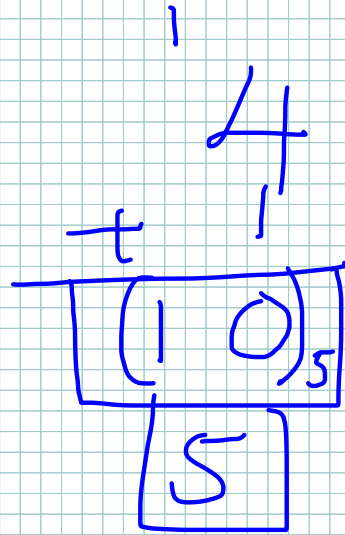
$$0 + 1 = 1$$

$$1 + 1 = 2$$

$$2 + 1 = 3$$

$$3 + 1 = 4$$

$$4 + 1 =$$



BASE 10		BASE 16									
0	0	0	0	0	0	8	8	1	0	0	8
1	1	0	0	0	1	9	9	1	0	0	1
2	2	0	0	1	0	10	A	1	0	1	0
3	3	0	0	1	1	11	B	1	0	1	1
4	4	0	1	0	0	12	C	1	1	0	0
5	5	0	1	0	1	13	D	1	1	0	1
6	6	0	1	1	0	14	E	1	1	1	0
7	7	0	1	1	1	15	F	1	1	1	1

$$(1001\ 0110)_2$$

$$\begin{matrix} 16^1 & 16^0 \\ (9 & 6)_{16} \end{matrix}$$

$$9 \times 16^1 = 9 \times 16 = 144$$

$$6 \times 16^0 = 6 \times 1 = 6$$

$$\begin{array}{r} 5 \\ 16 \\ \times 9 \\ \hline 144 \end{array}$$

$$\begin{array}{r} 6 \\ \hline (156)_{10} \end{array}$$

HEXADECIMAL

$$(A \ C)_{16}$$

$$\left(\begin{array}{cccc|cccc} 1 & 0 & 1 & 0 & 1 & 1 & 0 & 0 \end{array} \right)_2$$

$$(172)_{10}$$

$$\begin{array}{r} 2 \\ 128 \\ 32 \\ 8 \\ 4 \\ \hline 172 \end{array}$$

$$A \times 16^1 = 10 \times 16 = 160$$

$$C \times 16^0 = 12 \times 1 = 12$$

$$(172)_{10}$$

$$(211)_{10}$$

256	128	64	32	16	8	4	2	1
	1	1	0	1	0	0	1	1

$$\begin{array}{r} 211 \\ - 128 \\ \hline 83 \\ - 64 \\ \hline 19 \end{array}$$

$$\begin{array}{r} 19 \\ - 16 \\ \hline 3 \\ - 2 \\ \hline 1 \end{array}$$

$$(03)_{16}$$

$$(11010011)_2$$

$(3526)_{10}$

2048	1024	512	256	128	64	32	16	8	4	2	1
	1	0	1	1	1	0	0	0	1	1	0

$$\begin{array}{r} 3526 \\ - 2048 \\ \hline 1478 \\ - 1024 \\ \hline 454 \\ - 256 \\ \hline 198 \end{array}$$

$$\begin{array}{r} 198 \\ - 128 \\ \hline 70 \\ - 64 \\ \hline 6 \end{array}$$

$$(1101 \ 1100 \ 0110)_2$$

$(DC6)_{16}$