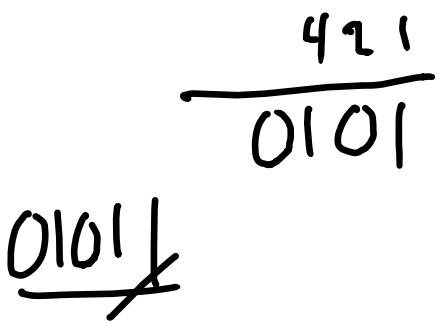
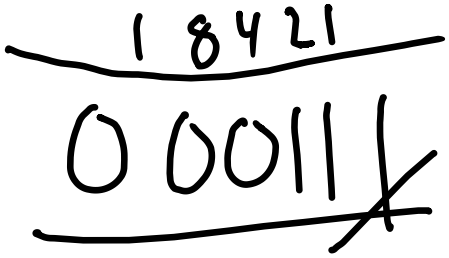
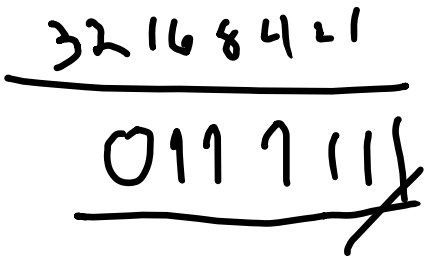
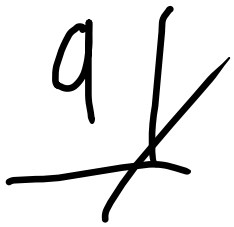
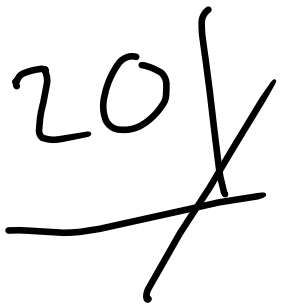
Chapter 1 Activity

1. Convert the following numbers from base 10 to base 2.

A. 5 	B. 9
C. 19 	D. 22
E. 31 	F. 32
G. 46	H. 67

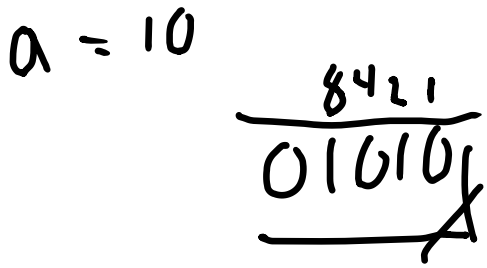
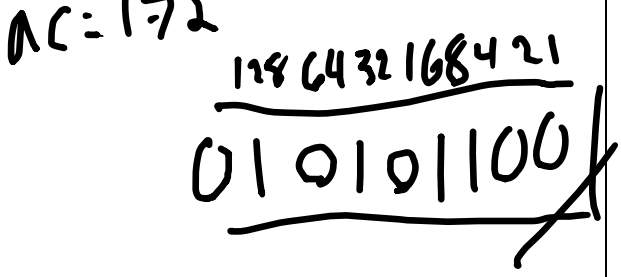
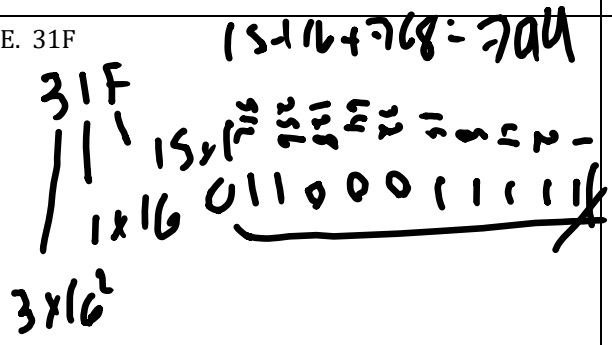
Convert the following numbers from base 10 to base 16.

2.

A. 5	B. 9 
C. 19	D. 22 
E. 31	F. 32 
G. 46	H. 67

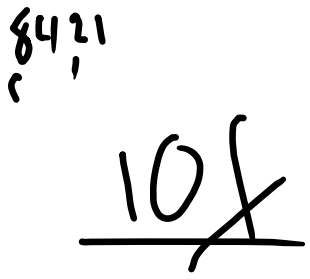
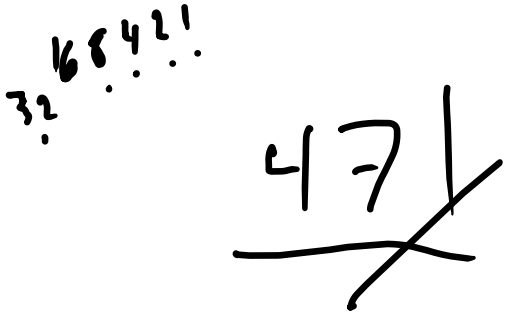
3.

Convert the following numbers from base 16 to base 2.

A. A 	B. 14
C. AC 	D. 4E
E. 31F 	F. 4CC
G. 4A5	H. B67

4.

Convert the following numbers from base 2 to base 10.

A. 1010100	B. 1010 
C. 110011	D. 101111 
E. 10001	F. 1111 
G. 10000111	H. 101101

5.

Convert the following numbers from base 2 to base 16.

A. 10101	B. 10101101 $2^7+2^5+2^3+2^2+1=173$ 173/16 10·13 D 16|16 0·10 A ~~AD~~
C. 10011110000	D. 110100110 0001 | 1010 | 0110 1 A 6 ~~1A6~~
E. 100000000	F. 110010 0011 | 0010 3 2 ~~32~~
G. 100110	H. 110111001

6.

Determine the result for the following operations (the numbers are base 2).

A.
`  1 1 1`
`+  1 0`
`---------`
`1001`
	B.
	`  1 0 1`
	`+  1 0`
	`----------`

C.
`  1 0 1 0`
`+  1 1 0`
`------------`
`10000`
	D.
	`  1 0 1 0`
	`+ 1 0 1 0`
	`-------------`

E.
`  1 0 1 0`
`+ 1 1 1 1`
`-------------`
`11001`
	F.
	`  1 0 1 1`
	`+  1 0 1`
	`-------------`

G.
`  1 1 1 1 0`
`+  1 1 1 0`
`----------------`
	H.
	`  1 0 1 1 1 0`
	`+  1 0 1`
	`------------------`

7. Determine the result for the following operations (the numbers are base 16).

A.
`  2 F D`
`+  1 A`
`---------`
`319`
	B.
	`  1 0 1`
	`+  1 0`
	`----------`

C.
`  A B C`
`+  1 1`
`---------`
`ACD`
	D.
	`  A B C D`
	`+ 1 A 1 B`
	`-------------`

7.

E.

```
  9  A  B  C
+ 1  2  3  4
------------
A C F 0
```

F.

```
  2  2  3  1
+    2  4  9
------------
```

8. Determine the result for the following operations (the numbers are base 2).

A.
`  1 1 1`
`-  1 0`
`---------`
	B.
	`  1 0 1`
	`-  1 0`
	`---------`
	`011`

C.
`  1 0 1 0`
`-  1 1 0`
`-------------`
	D.
	`  1 0 1 0`
	`-  1 0 1 0`
	`-------------`
	`0000`

E.
`  1 1 1 1`
`-  1 0 1 0`
`-------------`
	F.
	`  1 0 1 1`
	`-  1 0 1`
	`-------------`
	`0110`

G.
`  1 1 1 1 0`
`-  1 1 1 0`
`----------------`
	H.
	`  1 0 1 1 1 0`
	`-  1 0 1`
	`----------------------`
	`101001`

9. Determine the result for the following operations (the numbers are base 2).

A.
`  1 0 1 1 1 0`
`NOT ----------------`
`010001`
	B.
	`  1 0 1 1 1 0`
	`AND 1 1 1 0 0 0`
	`----------------`
	`101000`

C.
`  1 0 1 1 1 0`
`OR 1 0 0 0 1 1`
`----------------`
`101111`
	D.
	`  1 1 1 0 0 0`
	`XOR 1 0 0 0 1 1`
	`----------------`
	`011011`

10. Complete the following table.

	Decimal	Signed Positive Binary	One's Complement	Two's Complement
A.	-5_{10}	1 101	1 010	1 011
B.	-17_{10}	1 10001	1 01110	1 01111
C.	-42_{10}	1 101010	1 010101	1 010110

11. Complete the following table.

	Hex	One's complement	Two's complement	Decimal equivalent
A.	$6AF_{16}$	0110 1010 1111 1001 0101 0000	1001010100001	1711
B.	17_{16}	010111 101000	101001	23
C.	$42A6_{16}$	0100 1010 1010 0110 1011 1101 0101 1001	1011 1101 0101 1010	17062