1 1 1 1
8 4 2 1

1.A 1 1 0 1 1 0 1 1
0 0 1 0 0 1 0 0
+ 1
0 0 1 0 0 1 0 1
of 32+0 to +4 +1

-37_{10}

1B. 0 1 0 0 0 1 0 0
2^6 25 2^4 2^3 4+0+0

64 +4 = 68_{10}

1C.) 1 0 0 1 0 0 1 1
2^7 2^6 2^5 2^4 2^3 2^2 2^1 2^0

$2^7 + 2^4 + 2^1 + 2^0 = 147_{10}$

2A 65537

$2^{16} = 65536$ ∴ 17 bits unsigned 18 bits signed

2B 10661

$2^{14} = 16384$ $2^{15} = 8192$

14 bits unsigned 15 bits signed

1C $-4679 = 4679$ 2's Complement

13 bits

3A 1011 1101 1001 1100

11 13 9 12

B D 9 C

$BD9C_{16}$

3B 1101 0110 0101 0011

D 6 5 3

$D653_{16}$

3C.) 1011 0110 0001 1000

B 6 1 8

$B618_{16}$

4A.) 4024

$4(16^0) + 2(16^1) + 0(16^2) + 4(16^3)$

$4 + 32 + 16384$

$= 16420_{16}$

4B) FEE

$14(16^0) + 14(16^1) + 15(16^2)$

$14 + 224 + 3840 = \boxed{4078_{10}}$

4C) 1 0 F 3

$3(16^0) + 15(16) + 0 + 1(16^3)$

$\boxed{4339_{10}}$

5A.) $(-62_d) = 62_d \div 16 = 14 = E$

$3 \div 16 = 6$

$2 \div 16 = 2$

C 2 6 E 2's comp

F 0 9 1

$\boxed{F092_{16}}$

5B.) $(-300) = 300 \div 16 = 18$ r 12

$18 \div 16 = 1$ r 2

$1 \div 16 = 0$ r 1

0 1 2 C 2's complement

= C E D 3

+ 1

$\boxed{FED4_{16}}$

5C) $193C \div 16 = 12Cr\,1C \div 1C = 7R8 \div 1C = 0R7$

$\div 16 = 0$

$078A$

$= \boxed{078A_{16}}$

6A) $-(45) = 45 \div 2 = 22$ r, $\div 2 = 11$ r, $\div 2 = 5$ r, $\div 2 = 2$ r, $\div 2$:

00101101

11010010

+ 1

$\boxed{11010011_2}$

6B) $+107$

$\boxed{00110101_2}$

6C) $(-134) = 134$

10000110

01111001

+ 1

$\boxed{01111010_2}$

7. Fall

46 61. 6C 6C, 16

8. $-2^6, 2^6 - 1$

a) $[-64, 63]$

b) $-2^5, 2^5 - 1$

$[-32, 31]$