

* write the binary numbers for the following integers

1) 123 :
$$\begin{array}{r} 123 \quad 59 \quad 27 \quad 11 \quad 3 \quad 1 \\ -64 \quad -32 \quad -16 \quad -8 \quad -2 \quad -1 \\ \hline 59 \quad 27 \quad 11 \quad 3 \quad 1 \quad 0 \end{array}$$

0000 0000 0000 0000 0000 0000 0000 0000

1000 0000 0000 0000 0000 0000 0111 1011

ve (123)

2) 74 :
$$\begin{array}{r} 74 \quad 10 \quad 2 \\ -64 \quad -8 \quad -2 \\ \hline 10 \quad 2 \quad 0 \end{array}$$

0000 0000 0000 0000 0000 0000 0000 0000

0000 0000 0000 0000 0000 0000 0100 1010

- 3) -60 :
- 1) take 60
$$\begin{array}{r} 60 \quad 28 \quad 12 \quad 4 \\ -32 \quad -16 \quad -8 \quad -4 \\ \hline 28 \quad 12 \quad 4 \quad 0 \end{array}$$
- 2) convert binary
- 3) then 1's complement of binary 60
- 4) Add 1 into 1's complement
- 5) Convert that binary into decimal
- 6) Then we get -60

0000 0000 0000 0000 0000 0000 0000 0000

↓ 60

0000 0000 0000 0000 0000 0000 0000 0111 1000

1's complement ↓

1111 1111 1111 1111 1111 1111 1111 1100 0111

+1

1111 1111 1111 1111 1111 1111 1111 1100 0100

ve → -60

2) -11 :
$$\begin{array}{r} 11 \quad 3 \quad 1 \\ -8 \quad -2 \quad -1 \\ \hline 3 \quad 1 \quad 0 \end{array}$$

0000 0000 0000 0000 0000 0000 0000 0000

ve 4 11

1000 0000 0000 0000 0000 0000 0000 1011

1's complement

1111 1111 1111 1111 1111 1111 1111 0100

+1

0000 0000 0000 0000 0000 0000 0000 0001

1111 1111 1111 1111 1111 1111 1111 0101

→ -11