

The two's complement is a convenient way to store negative numbers for mathematical operations. The two's complement for a positive number is itself. To find the two's complement of a negative number  $-x$ , subtract one from  $x$  then bit invert the result. I am using 16 bits to represent each number.

A)  $10 \rightarrow 10$

B)  $436 \rightarrow 436$

C)  $1024 \rightarrow 1024$

D)  $-13$

$$13 - 1 = 12$$

$$12 \rightarrow 0000000000001100$$

$$\sim 0000000000001101 = 1111111111110011$$

$$1111111111110011 \rightarrow 65523$$

E)  $-1023$

$$1023 - 1 = 1022$$

$$1022 \rightarrow 0000001111111110$$

$$\sim 0000001111111110 = 1111110000000001$$

$$1111110000000001 \rightarrow 64513$$

F)  $-1024$

$$1024 - 1 = 1023$$

$$1023 \rightarrow 0000001111111111$$

$$\sim 0000001111111111 = 1111110000000000$$

$$1111110000000000 \rightarrow 64512$$