

Cheatsheet for Binary \leftrightarrow Decimal

1. To convert from binary to decimal use the standard powers of two method.
2. To convert from 1's complement to decimal, first identify whether the number is positive or negative:
 - positive (leftmost bit is 0): as in binary to decimal
 - negative (leftmost bit is 1): convert the number to its positive by flipping all the bits, then convert as in binary to decimal, then put a minus sign in front of it.
3. To convert from 2's complement to decimal, first identify whether the number is positive or negative:
 - positive (leftmost bit is 0): as in binary to decimal
 - negative (leftmost bit is 1): convert the number to its positive by flipping all the bits and adding 1, then convert as in binary to decimal, then put a minus sign in front of it.
4. To convert from decimal to binary use the method of coins or repeated division by 2, then add enough zeros to the left to adjust the number of bits to the desired number.
5. To convert from decimal to 1's complement, first identify whether the number is positive or negative:
 - positive: as in decimal to binary.
 - negative (minus sign): as in decimal to binary (ignoring sign), then flip all the bits.
6. To convert from decimal to 2's complement, first identify whether the number is positive or negative:
 - positive: as in decimal to binary.
 - negative (minus sign): as in decimal to binary (ignoring sign), then flip all the bits and add 1.