BINARY EXERCISES
Summer in JAPAN 2016: Computer Science Workshop

Base 2 (Binary) Place Value Chart to Eight Places

2^7	2^6	2^5	2^4	2^3	2^2	2^1	2^0
2 x 64	2 x 32	2 x 16	2 x 8	2 x 4	2 x 2	2 x 1	1
128	**64**	**32**	**16**	**8**	**4**	**2**	**1**
One hundred twenty-eights place	Sixty-fours place	Thirty-twos place	Sixteens place	Eights place	Fours place	Twos place	Ones place

Decimal (regular) to Binary:
Convert the decimal (regular) number into binary.

Ex.) 12 = ___0000110___

1) 7 = _____

2) 89 = _____

3) 72 = _____

4) 99 = _____

5) 252 = _____

Binary to decimal:
Convert the binary numbers into decimal (regular) numbers.

Ex.) 00000111 = ___7___

1) 00010110 = _____

2) 00110111 = _____

3) 11111111 = _____

4) 10101010 = _____

5) 01101011 = _____

Bonus - Binary Addition:
Add the binary numbers together. Convert the final number to decimal.

```
          1       1
Ex.)  00010001      2)   01001100      3)    0001110
    + 00011101         + 00010101          + 0000111
      00101110
```

Bonus - Binary Subtraction:
Subtract the binary numbers. Convert the final number to decimal.

```
Ex.)  00001111      2)   01001100      3)   0101101
    + 00000101         - 00010101         - 0100111
      00001010
```