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 One hundred twenty-eights place	**64** Sixty-fours place	**32** Thirty-twos place	**16** Sixteens place	**8** Eights place	**4** Fours place	**2** Twos place	**1** Ones place

Decimal (regular) to Binary:

Convert the decimal (regular) number into binary.

Ex.) 12 = 00001100

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.

Ex.)
```
  1   1
  00010001
+ 00011101
  00101110
```

2)
```
  01001100
+ 00010101
```

3)
```
  0001110
+ 0000111
```

Bonus - Binary Subtraction:

Subtract the binary numbers. Convert the final number to decimal.

Ex.)
```
  00001111
- 00000101
  00001010
```

2)
```
  01001100
- 00010101
```

3)
```
  0101101
- 0100111
```