1.
1873 base 2
1873 / 2 = 936 remaining 1
936 / 2 = 468 remaining 0
468 / 2 = 234 remaining 0
234 / 2 = 117 remaining 0
117 / 2 = 58 remaining 1
58 / 2 = 29 remaining 0
29 / 2 = 14 remaining 1
14 / 2 = 7 remaining 0
7 / 2 = 3 remaining 1
3 / 2 = 1 remaining 1
1 / 2 = 0 remaining 1

Result = 11101010001

1873 base 7
1873 / 7 = 267 remaining 4
267 / 7 = 38 remaining 1
38 / 7 = 5 remaining 3
5 / 7 = 0 remaining 5

Result = 5314

1873 base 8
1873 / 8 = 234 remaining 1
234 / 8 = 29 remaining 2
29 / 8 = 3 remaining 5
3 / 8 = 0 remaining 3

Result = 3521

2.

```
def dec_to_bin(x:int):
    if x == 0:
        return ' '
    return dec_to_bin(x//2) + str(x%2)
```

```
def dec_to_base_y(x:int, y:int):
    if x == 0 :
        return ' '
    return dec_to_base_y(x//y, y) + str(x%y)
```

3.

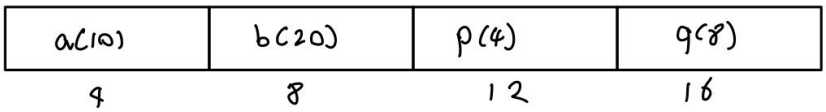
Assume that are 4 bit the smallest is -8

-8 and 8 are same binary when use two compliment other than this will be opposite binary +1

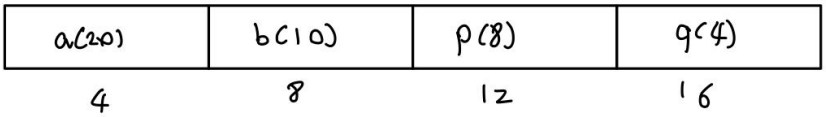
4.

Decimal	Hexadecimal	Octal	Binary
3410	D52	6522	0000 1101 0101 0010
65407	FF7F	177577	1111 1111 0111 1111
7711	1E1F	017037	0001 1110 0001 1111
64436	FBB4	175664	1111 1011 1011 0100

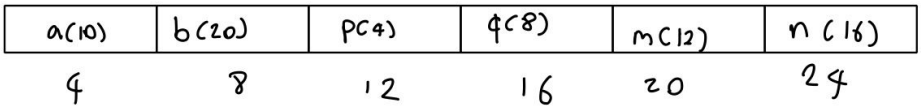
⑤ Before



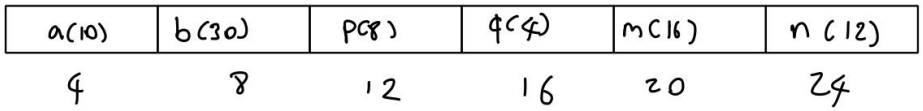
After



⑥ X



Y



7.

	Input1	Input2	Select	Output

5 + 9 (unsigned):	1001	0101	0	1110
5 + (-7) (signed):	0101	1001	0	1110
5 - 7 (signed):	0101	0111	1	1110
4 + 11 (unsigned)	0100	1011	0	1111
4 + (-5) (signed)	0100	1011	0	1111
4 - 5 (signed)	0100	0101	1	1111

8.

	Input1	Input2	Select	Output
5-(-7) (signed):	0101	1001	1	1100
4 - (-5) (signed):	0100	1011	1	1001
(-5) - 7 (signed):	1011	0111	1	0100overflow
6 + 7 (signed)	0110	0111	0	1101
6 - 4	0110	0100	1	0010overflow

(signed)				
1 - 6 (signed)	0001	0110	1	1011