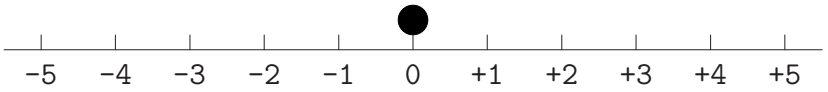
Walk the Line

Computer Science Society
Programming Contest
Fall 2011

Imaging taking a random walk on a number line, starting at origin `0`, driven by successive coin tosses compelling you to move one step to the right (heads = `+1`) or to the left (tails = `-1`).



After n steps from the origin, the (unlikely) farthest ends of the 2^n possible walks occur at $-n$ and $+n$, with many more walks ending closer to `0`.

Input Format

Each input line contains a number of steps $0 \leqslant n < 64$ and an integer distance $-n \leqslant \Delta \leqslant +n$.

Output Format

For each input line, compute the number of n-step random walks starting from the origin `0` that end at distance Δ from the origin.

Input Sample

```
5 -5
5 -4
5 -3
5 -2
5 -1
5 0
5 1
5 2
5 3
5 4
5 5
10 0
10 6
10 -4
19 0
19 -3
19 17
63 1
63 -1
63 63
```

Output Sample

```
1 5-step walks end at -5
0 5-step walks end at -4
5 5-step walks end at -3
0 5-step walks end at -2
10 5-step walks end at -1
0 5-step walks end at 0
10 5-step walks end at 1
0 5-step walks end at 2
5 5-step walks end at 3
0 5-step walks end at 4
1 5-step walks end at 5
252 10-step walks end at 0
45 10-step walks end at 6
120 10-step walks end at -4
0 19-step walks end at 0
75582 19-step walks end at -3
19 19-step walks end at 17
916312070471295267 63-step walks end at 1
916312070471295267 63-step walks end at -1
1 63-step walks end at 63
```