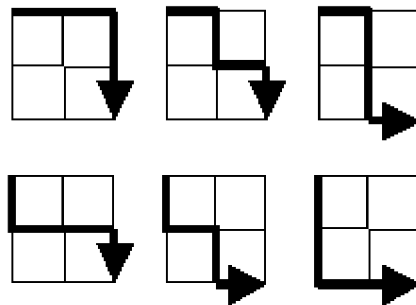


Lattice paths

Problem 15

Starting in the top left corner of a 2×2 grid, and only being able to move to the right and down, there are exactly 6 routes to the bottom right corner.



How many such routes are there through a 20×20 grid?

Solution 1

```
In [1]: from scipy.special import comb

N = 20

print(sum(comb(N, k, exact = True)**2 for k in range(N+1)))

137846528820
```

Solution 2

Oneliner

No **scipy** but less efficient.

```
In [2]: print(sum(z*z for z in (sum(bin(y).count('1') == x for y in
range(2**20)) for x in range(21))))

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```