Rod cutting problem

Given a rod of length 'n' and a list of pieces of length i, where $1 \leq i \leq n$, find the optimal way to cut the rod into smaller rods to maximize profit

price[] =

0	1	5	8	9	10	17	17	20
0	1	2	3	4	5	6	7	8

$$OPT(K) = \max_{1 \leq i \leq K} \{ price[i] + OPT(K-i) \}$$

optimal price of rod of length K

```
memo = [ ]
for x in range(n+1)
    maxs = -∞
    for y in range(x):
        maxs = max(maxs, P[y] + memo[x-y-1])
    memo[i] = maxs
return memo[n]
```