Rx

f) The 0,1 knapsack problem. 20K-0343

$V = [3, 5, 4, 8, 10]$ $W = 5$

$w = [1, 2, 3, 4, 5]$

Vi	Wi	index	0	1	2	3	4	5
10	5	5	0	3	5	8	8	11
8	4	4	0	3	5	8	8	11
4	3	3	0	3	5	8	8	9
5	2	2	0	3	5	8	8	8
3	1	1	0	3	3	3	3	3
		0						

g) $S = \{1, 8, 13, 1, 4, 5\}$

According to partition problem

$$\frac{\text{Sum}}{2} = \frac{32}{2} = 16$$

we can't solve as there are no possible subsets whose sum = 16.

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Rx

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h) Rod cutting Problem.

length[] = {1, 2, 3, 4, 5, 6, 7, 8}

price[] = {1, 5, 8, 9, 10, 16, 18, 20}

Rod length = 8

		1	2	3	4	5	6	7	8
1	1	1	2	3	4	5	6	7	8.
5	2	1	5	6	10	11	15	16	20
8	3	1	5	8	10	13	16	17	21
9	4	1	5	8	10	13	16	17	21
10	5	1	5	8	10	13	16	17	21
16	6	1	5	8	10	13	16	17	21
18	7	1	5	8	10	13	16	17	21
20	8	1	5	8	10	13	16	17	21

Rods required = 3, 3, 2

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Rx (i) Coin change Problem

$S = \{1, 5, 6, 8\}$

Desired change = 13.

① exlcude the coin

② Include the coin.

③ Add ① & ②

	0	1	2	3	4	5	6	7	8	9	10	11	12	13
1	0	1	2	3	4	5	6	7	8	9	10	11	12	13
5	0	1	2	3	4	↑1	2	3	4	5	2	3	4	5
6	0	1	2	3	4	↑1	1	2	3	4	2	2	2	3
8	0	1	2	3	4	↑1	1	2	1	2	2	2	2	2 ↑

Answer = $8_{>5}$

Qok-0343

(j) S = { i, like, ice, cream, ice cream, mobile, apple }

Input plike apple

	i	l	i	k	e	a	p	p	l	e
i	T	f	f	f	T,0	f	f	f	f	(T,0)
l		f	f	f	T	f	f	f	f	(T,4)
i			T	f	f	f	f	f	f	f
k				f	f	f	f	f	f	f
e					f	f	f	f	f	f
a						f	f	f	f	T
p							f	f	f	f
l								f	f	f
e									f	f