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Wings and Nuggets ☆ ✓

Code

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One day, Alice and Bob visit the M fast food chain because they love the food there. Alice likes Wings and Bob likes Nuggets. In the restaurant, Wings and Nuggets come in different quantities and they have different prices. Can you help Alice and Bob to find the optimum way to order?

The M restaurant offers Wings in packs of 2 or 4. The price of 2 Wings is W_2 dollars and the price of 4 Wings is W_4 dollars. On the other hand, the restaurant offers Nuggets in packs of 4, 6 or 9. The prices of 4, 6 and 9 Nuggets are N_4, N_6, and N_9 dollars respectively. Note that all prices are positive integers and the price of a larger pack is always greater than that of a smaller pack.

The task is divided into 4 subtasks. You may write separate programs to solve them separately as the scores of the subtasks are cumulative.

SUBTASK 1

In subtask 1, you should help Alice to find the minimum cost of buying at least X Wings.

Input: The first line contains a single integer 1, indicating subtask 1. The second line contains two integers W_2 and W_4, the prices of 2 Wings and 4 Wings respectively. The third line contains an integer X.

Output a single integer: the minimum cost (in dollars) to buy at least X Wings.

SUBTASK 2

In subtask 2, you should help Alice to find the maximum number of Wings she can buy with not more than Y dollars.

Input: The first line contains a single integer 2, indicating subtask 2. The second line contains two integers W_2 and W_4, the prices of 2 Wings and 4 Wings respectively. The third line contains an integer Y.

Output a single integer: the maximum number of Wings she can buy.

SUBTASK 3

In subtask 3, you should help Bob to find the minimum cost of buying at least X Nuggets.

Input: The first line contains a single integer 3, indicating subtask 3. The second line contains three integers N_4, N_6 and N_9, the prices of 4, 6 and 9 Nuggets respectively. The third line contains an integer X.

Output a single integer: the minimum cost (in dollars) to buy at least X Nuggets.

SUBTASK 4

In subtask 4, you should help Bob to find the maximum number of Nuggets he can buy with not more than Y dollars.

Input: The first line contains a single integer 4, indicating subtask 4. The second line contains three integers N_4, N_6 and N_9, the prices of 4, 6 and 9 Nuggets respectively. The third line contains an integer Y.

Output a single integer: the maximum number of Nuggets he can buy.

SAMPLE TESTS

	Input	Output
1	1 10 18 5	28

Alice wants to buy at least 5 Wings. The optimum solution is to buy a pack of 2 Wings and a pack of 4 Wings. The total cost is 10 + 18 = 28 dollars.

	Input	Output
2	2 10 18 101	22

Alice wants to buy as many Wings as possible with 101 dollars. The optimum solution is to buy 1 pack of 2 Wings and 5 packs of 4 Wings. The total cost is 100 dollars for 22 Wings.

	Input	Output
3	3 14 21 27 12	41

Bob wants to buy at least 12 Nuggets. The optimum solution is to buy ta pack of 4 Nuggets and a pack of 9 Nuggets. The total cost is 14 + 27 = 41 dollars.

	Input	Output
4	4 14 21 27 46	13

Bob wants to buy as many Nuggets as possible with 46 dollars. The optimum solution is to buy 1 pack of 4 Nuggets and 1 pack of 9 Nuggets. The total cost is 41 dollars for 13 Nuggets.

SUBTASKS

	Points	Constraints
1	22	$1 \le W_2 < W_4 \le 100$ $1 \le X \le 100$
2	24	$1 \le W_2 < W_4 \le 100$ $1 \le Y \le 10000$
3	26	$1 \le N_4 < N_6 < N_9 \le 100$ $1 \le X \le 100$
4	28	$1 \le N_4 < N_6 < N_9 \le 100$ $1 \le Y \le 10000$