Knapsack

Time Limit: 2 seconds

Problem Description

There are n items with weights w[i] and values v[i], for 1 from 1 to n. For a weight constraint W, please find the maximum total value of chosen items such that the total weight of the chosen items is at most W. Each item can only be either entirely chosen or not chosen.

Input File Format

There are several test data. The first line of each test data contains the number n and the constraint W, where n<500 and W<=100000. In the next n lines, each line contains two integers w[i] and v[i] of one item. All weights and values are positive integers at most 1000. The case n=0 indicates the end of input, and you do not need to process it.

Output Format

Output the maximum value of each test data in one line.

Example

Sample Input	Sample Output
4 3 1 10 2 18 3 17 2 16 5 20 10 5 6 7 4 3 7 9 12 15 0	28 24