Worksheet for Lab #1 Ex3: Packing

http://www.comp.nus.edu.sg/~cs1010/labs/2016s1/lab1/threeSimpleExercises.html

Task Statement

You are given a rectangle tray and an unlimited supply of slabs. An example of a 12×20 tray and an 8×3 slab are shown in Figure 1a below.

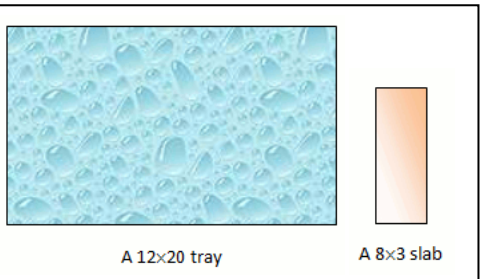

Figure 1a

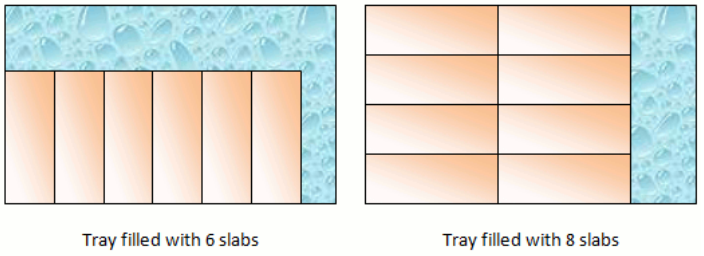

Figure 1b

You are to find the **maximum number of slabs** that can be packed into the tray. The slabs may be packed in either one of the two orientations, as shown in Figure 1b above, but not in a mix of orientations.

The figures above show that the tray may be filled with 6 slabs arranged in one orientation, or 8 slabs arranged in the other orientation. Hence, the answer is 8.

Step 1

What are the inputs and outputs? Are there intermediate results? Fill the table below with their variable names.

Inputs	***Intermediate results***	***Outputs***

Step 2

There are two orientations to consider. The logic for both should be quite similar. Let's focus on one orientation first. Write down your algorithm (pseudo-code) below for finding the number of slabs in one orientation. You may use additional variables if necessary.

Step 3
Walk through your algorithm in step 2 with the following 3 sets of test data and write down the result:

Test data	*Values of variables*	*Result*
`12 20 8 3`		
`60 35 6 8`		
`100 100 20 20`		

Step 4
Modify the algorithm in step 2 to find the number of slabs in the other orientation.

Step 5
Walk through your algorithm in step 4 with the following 3 sets of test data and write down the result:

Test data	*Values of variables*	*Result*
`12 20 8 3`		
`60 35 6 8`		
`100 100 20 20`		

Step 6
Combine your results in steps 3 and 5. Determine the final result.

Test data	*Result of step 3*	*Result of step 5*	*Final result*
`12 20 8 3`			
`60 35 6 8`			
`100 100 20 20`			