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Section 2: Greedy Algorithms (4 Questions)

Money Change

1/1 point (graded)

Assume that you have an unlimited number of coins with denominations 1, 3, 9, and 27. What is the minimum number of coins needed to change 100?



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You have used 1 of 1 attempt

Maximum Value of the Loot

1/1 point (graded)

A thief breaks into a spice shop and finds four pounds of saffron, three pounds of vanilla, and five pounds of cinnamon. His backpack fits at most nine pounds, therefore he cannot take everything. Assuming that the prices of saffron, vanilla, and cinnamon are **\$5 000**, **\$200**, and **\$10** per pound respectively, what is the most valuable loot in this case? If the thief takes u_1 pounds of saffron, u_2 pounds of vanilla, and u_3 pounds of cinnamon, the total price of the loot is $5\,000 \cdot u_1 + 200 \cdot u_2 + 10 \cdot u_3$.



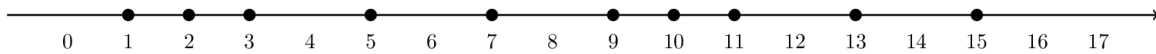
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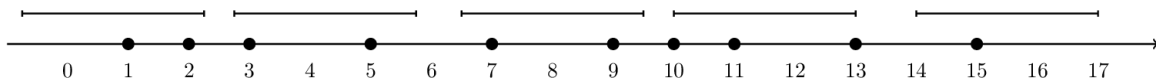
Covering points by segments

1/1 point (graded)

You are given ten points on a line.



You would like to cover them with the least number of segments of length three. For example, all the points can be covered with five segments of length three.



What is the least number of segments required to cover all the points?

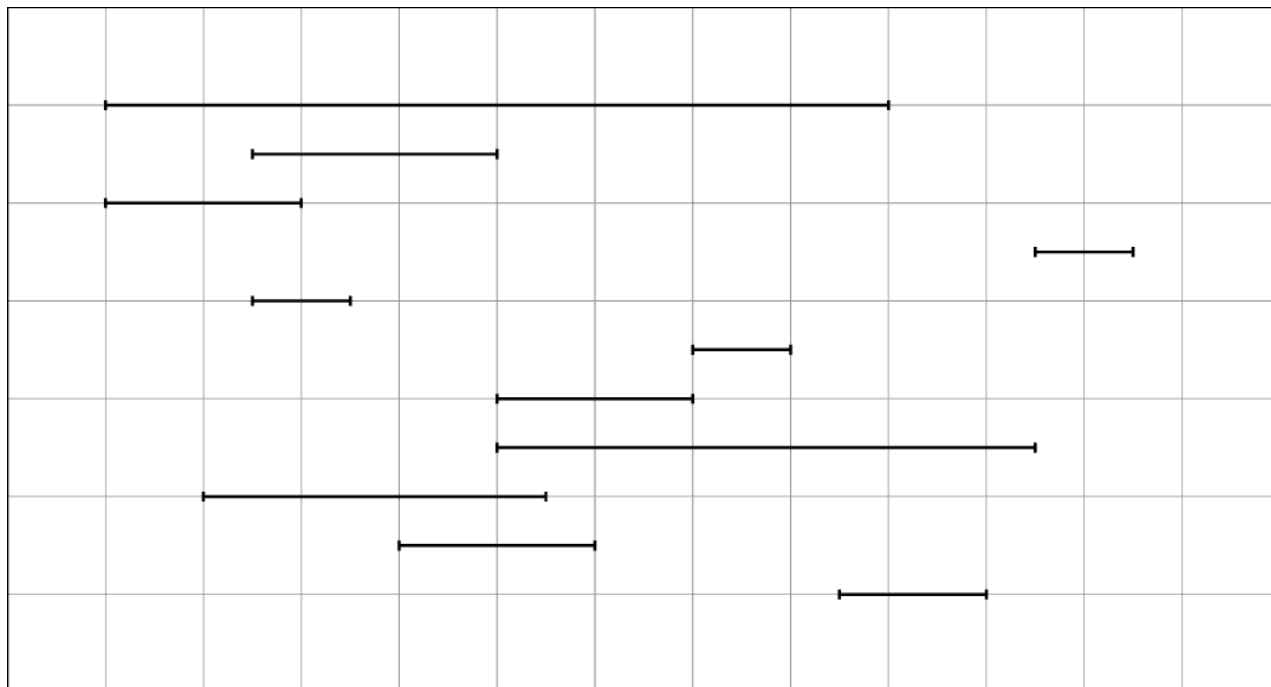


You have used 1 of 1 attempt

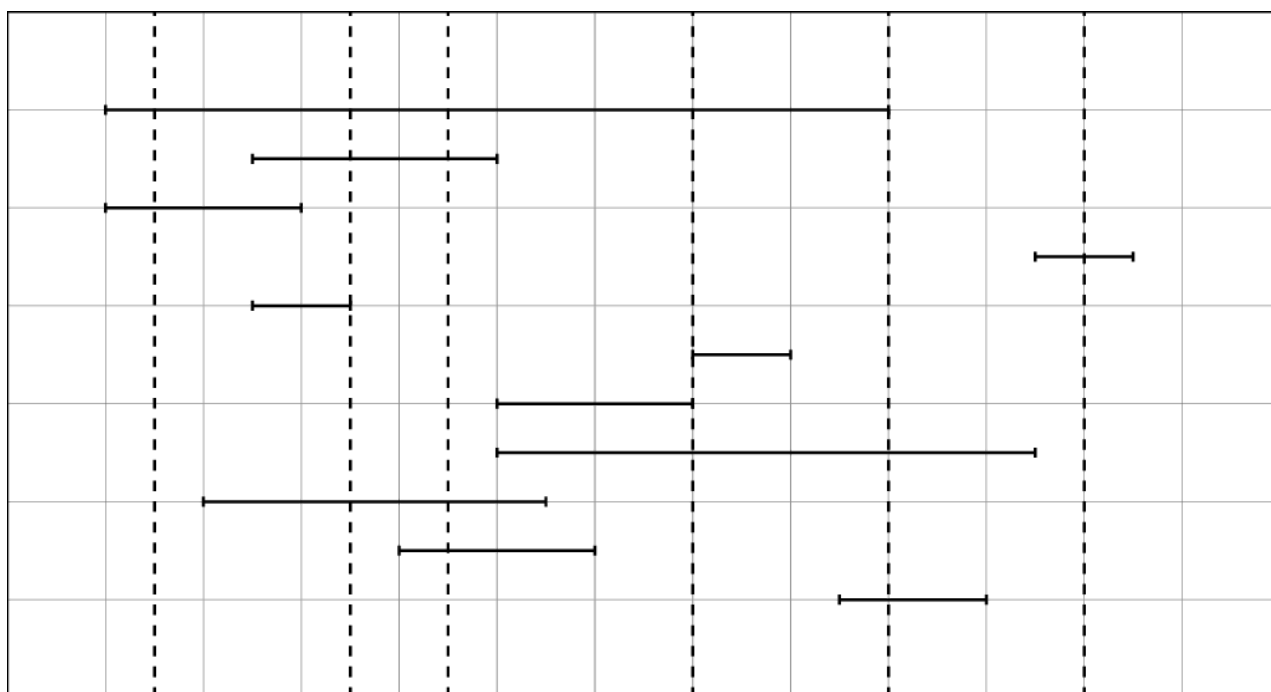
Covering segments by points

1/1 point (graded)

You are given eleven horizontal segments.



You would like to draw the least possible number of vertical lines so that each segment is intersected by at least one line. For example, the following six lines intersect all eleven segments.



What is the least number of vertical lines required?



You have used 1 of 1 attempt

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