Name:	shi qiu
Access ID:	sbq5043
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Problem 1

work with Zimeng Liu

"I did not consult anyone except my group members".

NO non-class material.

Problem 2

ce ad bf cf ac ag

a d c e f b g

Problem 3 | **Points:** |

1.) no, it does not change, for example, if we use the Kruskal's algorithm to find the MST, we are finding the smallest edge weight, ans if all edge are increased by one, we will still find the same smallest edge, except one edge weight bigger.

2.) yes, it will change, because if the original shortest path consist 5 edge weight 3 each, which is 15 in total and there is a another path consist 2 edge weight 8 each (16 in total). If we increase every edge weight by one, the original shortest path will now be 5*4=20, while the other one will be 2*9-18 and become the shortest one.

Problem 4

1. e* be the heaviest edge in the cycle, if e* is in the MST, assume we remove the e*, the T will become two tree and since e* is in the cycle, there must be other edge can connect these tree that is less heavy then e*. So e* can not be in the MST.