Math Circle 9/24/2016 Meeting: Challenge of the week

Make sure that your solution is correct, complete, and clearly written. You should not expect much credit if your proof refers to a false statement, or even if all your statements are true but you forgot to tell us "why?" It is one of the purposes of the Circle to help you improve your "essay-proof" writing style as well as your logical skills.

Please remember that the Challenge is **individual**. Although we strongly encourage cooperation and help among the participants of the Circle, the Weekly Challenge will be one exception to this rule: you may consult your notes, but you may not ask other people to help you.

Problem 2.

A. There are 5 identical paper triangles on the table. Each can be translated, i.e. moved in any direction parallel to itself (without rotating it). Is it true that regardless of the initial position of the triangles, translating 4 triangles we can always completely cover the remaining one (overlaps are allowed)?

B. There are 5 identical equilateral paper triangles on the table. Each can be translated. Prove that, regardless of the initial position of the triangles, translating 4 triangles we can always completely cover the remaining one (overlaps are allowed).