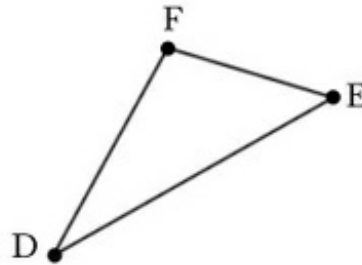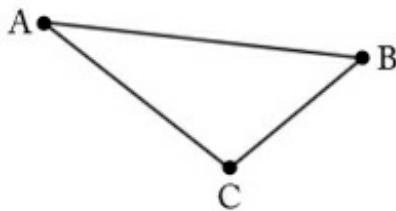# G-CO Why does SAS work?

Task

In the two triangles below, angle A is congruent to angle D, side AC is congruent to side DF and side AB is congruent to side DE:

Sally reasons as follows: "If angle A is congruent to angle D then I can move point A to point D so that side AB lies on top of side DE and side AC lies on top of side DF. Since AB and DE are congruent as are AC and DF the two triangles match up exactly and so they are congruent."

Explain Sally's reasoning for why triangle ABC is congruent to triangle DEF using the language of reflections:

a. Construct a reflection which maps point A to point D. Call B' and C' the images of B and C respectively under this reflection.

b. Construct a reflection which does not move D but which sends B' to E. Call C'' the image of C' under this reflection.

c. Construct a reflection which does not move D or E but which sends C'' to F.