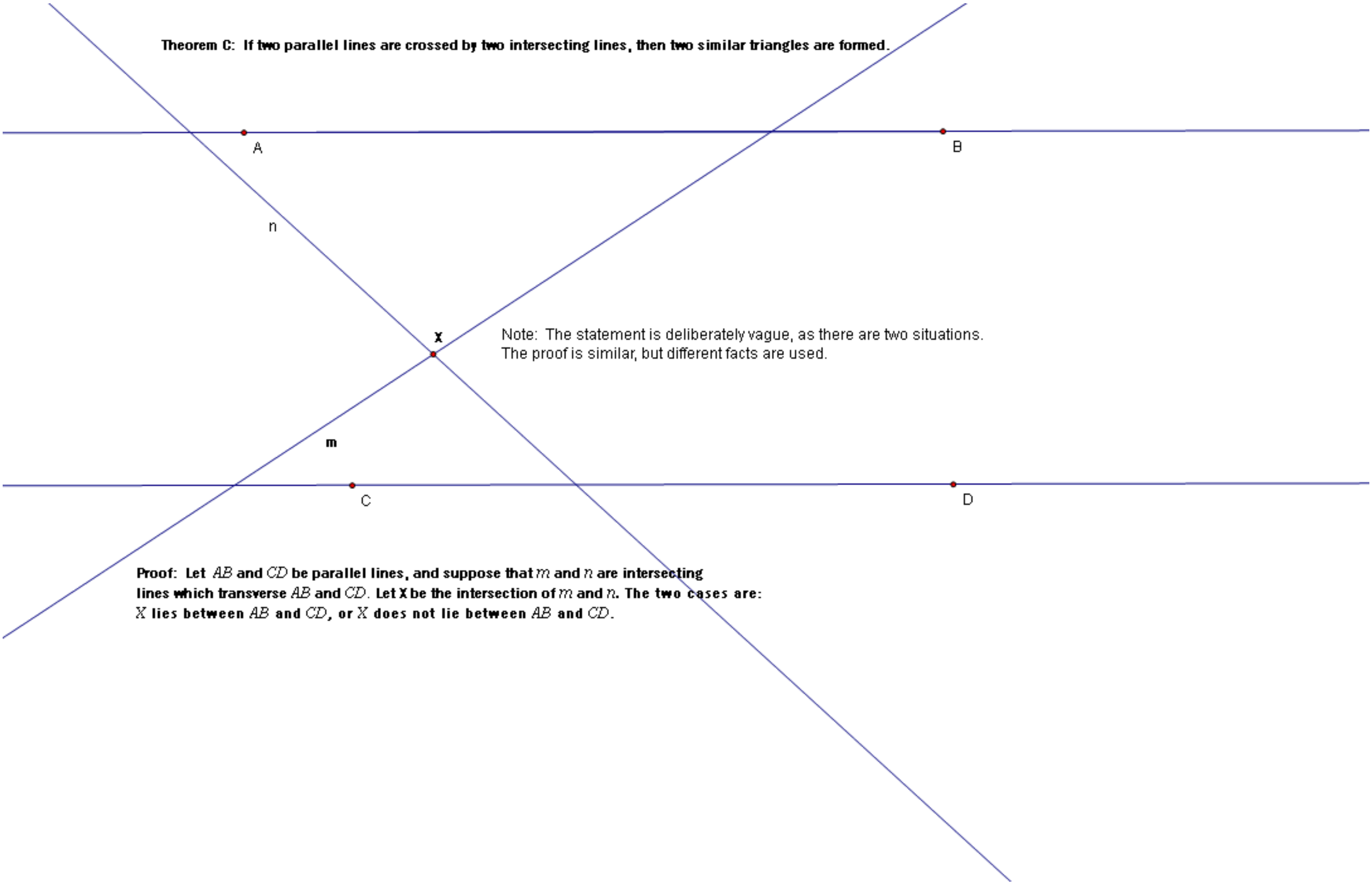
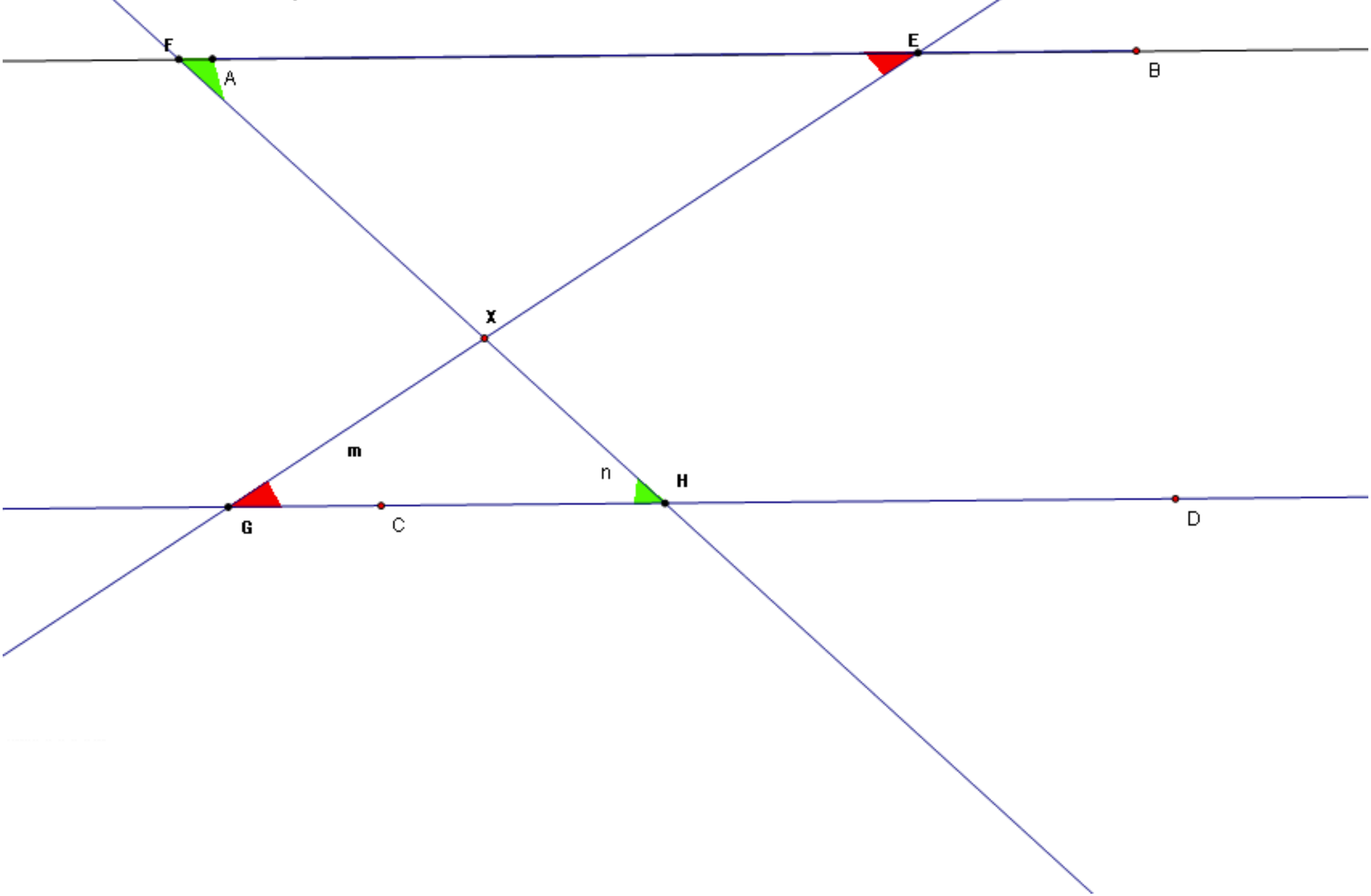
Theorem C: If two parallel lines are crossed by two intersecting lines, then two similar triangles are formed.



Note: The statement is deliberately vague, as there are two situations.
The proof is similar, but different facts are used.

Proof: Let AB and CD be parallel lines, and suppose that m and n are intersecting lines which transverse AB and CD. Let X be the intersection of m and n. The two cases are: X lies between AB and CD, or X does not lie between AB and CD.

Assume first that X lies between the lines AB and CD. Let E and F be the intersections of m and n respectively, with AB., Let G and H be the intersections of m and n, respectively with CD. Using n as a transversal to AB and CD we have <XFE=<XHG, by Theorem 2(a). Similarly, using m as the transversal, <XEF=<XGH. Finally, by Theorem 1(a), <EXF=<GXH. So, by definition, △GXH~△EXF.



Now assume that X lies outside the lines AB and CD. Let E,F,G, and H be as before. Using n as a transversal to AB and CD we have <XFE=<XHG, by BF5. Similarly, using m as the transversal, <XEF=<XGH. Finally, <EXF=<GXH, so by definition $\triangle EXF \sim \triangle GXH$. *QED*