Assignment 9

1. Prove: If two angles in a triangle are congruent, then the sides opposite them are congruent. If a triangle is equiangular, then it is equilateral.
2. In the figure 0.0.1, suppose that point X is the midpoint of segments $\overline{AB}$ and $\overline{CD}$. Which triangles in the figure are congruent? Prove your assertion.

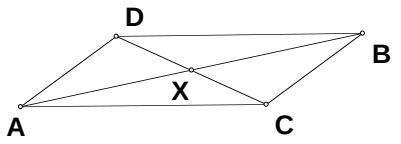

Figure 0.0.1. Exercise 2

3. In Figure 0.0.2, suppose that point X is the midpoint of segment $\overline{AB}$, and that $\overline{CD} \perp \overline{AB}$. Which triangles in the figure are congruent? Prove your assertion.

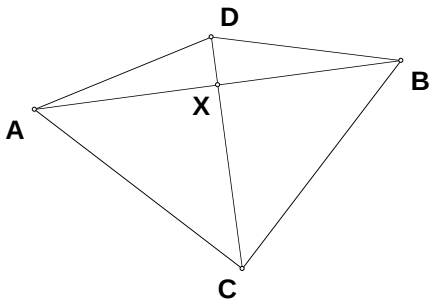

Figure 0.0.2. A Kite

4. Refer again to Figure 0.0.2. Suppose now that point X is the midpoint of segment $\overline{AB}$, and that $\angle CAX \cong \angle CBX$. Which triangles in the figure are congruent? Prove your assertion. Does it follow that $\overline{CD} \perp \overline{AB}$? Why?
5. Refer again to Figure 0.0.2. Suppose now that $\angle ACX \cong \angle BCX$ and $\overline{AC} \cong \overline{BC}$. Which triangles in the figure are congruent? Prove your assertion. Doesl it follow that $\overline{CD} \perp \overline{AB}$? Why?
6. Prove that Construction 2.7.5 is valid (assuming Facts A and B).
7. Prove that Construction 2.7.6 is valid (assuming Facts A and B).