Problem 1
The triangle $ABC$ and the triangle $ADC$ are congruent to each other since $AD = AB, DC = BC, AC = AC$. So $\angle DAC = \angle BAC, \angle DCA = \angle BCA$. So $CA$ bisects $\angle DAB$. $\triangle DAB$ is an isosceles triangle. We proved before that the angle bisector coincides with the altitude in an isosceles triangle. So $AC \perp DB$