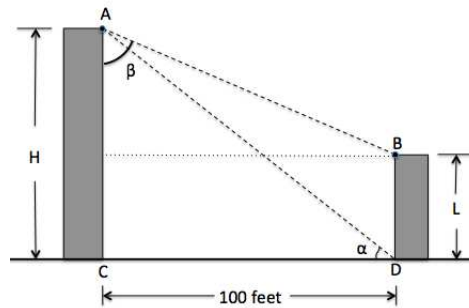**5.** [9 points]  Jimmy is at the top of a building at point $A$ (see the diagram below). He is trying to determine the heights $H$ and $L$ of the building at which he is standing and another building that is 100 feet away. He finds out that the angles $\alpha = ADC$ and $\beta = BAC$ measure $37°$ and $65°$ respectively.



**a.** [2 points]  Find a formula for the length of the segment $AD$ in terms of the height $H$ of the building at which Jimmy is standing.

Length of $AD =$ _____

**b.** [3 points]  Find the height $H$ of the building in which Jimmy is standing. Include units. Your answer must be exact or include at least two decimals. Show all your work.

$H =$ _____

**c.** [4 points]  Find the height $L$ of the building that is 100 feet away. Include units. Your answer must be exact or include at least two decimals. Show all your work.

$L =$ _____