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 $\alpha = \angle ADC$ and $\beta = \angle BAC$ measure $37^\circ$ and $65^\circ$ respectively.

\begin{figure}[h]
\centering
\includegraphics[width=0.5\textwidth]{diagram.png}
\caption{Diagram showing the angles and distances.}
\end{figure}

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.

$L =$ ______________