Solutions, Quiz 1, CSci 490, Spring 2005

1. 100 pixels. [The projection of the wall onto the screen would be 1/2 a foot, since the distance:height ratio would be the same both for the wall (40:10) and for the projection of the wall onto the screen (2:y). This is half the height of the screen.]

2. 

3. 

\[
\begin{pmatrix}
2 & 0 & 0 & 0 \\
0 & 2 & 0 & 0 \\
0 & 0 & 2 & 4 \\
0 & 0 & 0 & 1
\end{pmatrix}
\]

4. In an orthographic projection, all vertices are projected along parallel lines to the viewplane; in a perspective projection, all vertices are projected onto the viewplane along lines intersecting in a single point (the eye’s location). The result is that a perspective projection gives a perception of depth, where a fixed line length is shorter as it recedes from the eye; whereas with an orthographic projection, a fixed line length remains the same length as it recedes.