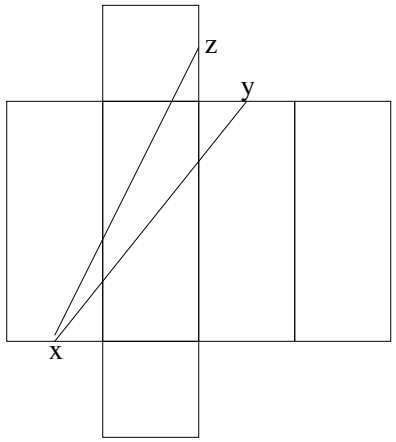
Solution to Challenge 8, Fall '04

Cut the room open like you might a box and lay it out flat, in order to turn the problem into that of finding the shortest path between two points on a plane:



The ant starts at the point marked x. Following a straight line to the point marked y yields a path of length $\sqrt{4^2 + 5^2} = \sqrt{41}$, which is approximately 6.4. It is not hard to show that there are no better candidates; this is the optimum solution.

Many people fell for the solution that travels the line from x to z, for a distance of $\sqrt{3^2 + 6^2} = \sqrt{45}$. Others submitted solutions that map to a crooked line line in the plane after the box-cutting trick is applied; "straightening out" such a path yields a shorter solution.