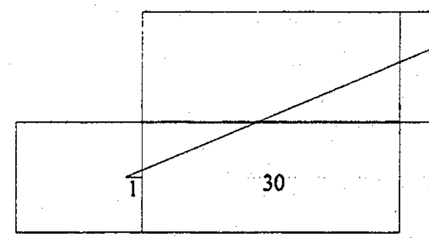
In fact, I suddenly don't know what to do. I did not expect this. I always want the new ideas to come from the class. There are 50 students in this session, and at the very least I expect some doubting Thomas or Thomasina to come forward with reservations, no matter how vague. But there is not a hint of revolt. How can this have happened? What am I to do?

In fact, I explode: ***Well you're wrong—you're simply wrong!*** *I am sufficiently loud and exasperated to get a few students peeking in from the hall to see what the excitement might be about. I invite them in but they see that it's a math class and they scurry away.*

Fortunately I have brought squared paper, scissors and tape. "Make boxes," I decree.

Most students embark with enthusiasm on this "cut and paste" activity, but a few continue to stare in puzzlement at their diagrams. As I wander around the room, I notice that without fail all of their pictures are 3-dimensional! Interesting, and not what I had expected. Perhaps the boxes they are making will allow them to see how to make use of 2-dimensional representations.



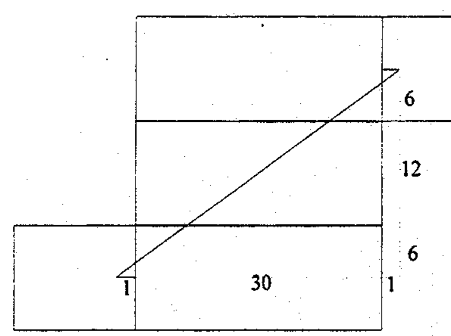
A route with

$D=\sqrt{37^2+17^2}=\sqrt{1658}\approx 40.72$

Indeed, quite soon there are 2-D diagrams sprouting all through the classroom. And in no time, a floor-sidewall solution appears on the board with a distance of 40.72 feet.

This is very nice—by opening out the box, the minimum path can be represented as a straight line. The guys who had "proved" that 42 was the minimum had to study this picture real carefully.

Now we have a nice technique for generating minimum paths. Can we use it to find other even shorter paths, or is 40.72 the best we can do? I try to take a vote, but there are few "takers." Most students have their noses buried determinedly in their papers.



A route with

$D=\sqrt{32^2+24^2}=8\sqrt{4^2+3^2}=8\cdot 5=$

Before long another type of path appears on the board with a distance of exactly 40 feet. This one uses the ceiling as well as the side wall. The answer is a whole integer (and a nice one at that) so surely this must be the correct solution. Is it?

In fact it is. For any particular way of opening the box up, we get the shortest path by drawing a straight line, and so all we have to do is to make sure that all possible (or I should say all "reasonable") openings have been diagrammed.