

### 38. 1. Understanding the Problem

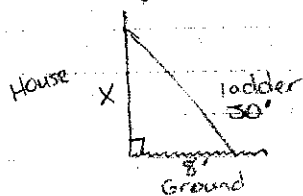
The problem is asking what the difference would be in where the ladder rests against the wall if a 30 ft ladder was moved from being 8 feet from the wall to 15 from the wall.

### 2. Devising a Plan

My plan is to draw pictures to represent the two different scenarios. Then I will use the pythagorean theorem to find the height at which the ladder rests against the wall <sup>for each scenario</sup>. Since the wall, ground, and ladder form a right triangle. After that I will subtract the two to find how far the ladder moved.

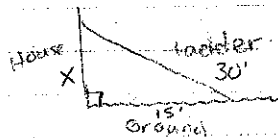
### 3. Carry out the Plan

Original position



$$\begin{aligned}a^2 + b^2 &= c^2 \\8^2 + b^2 &= 30^2 \\64 + b^2 &= 900 \\b^2 &= 836 \\b &= 28.91 \text{ ft}\end{aligned}$$

After ladder is moved



$$\begin{aligned}a^2 + b^2 &= c^2 \\15^2 + b^2 &= 30^2 \\225 + b^2 &= 900 \\b^2 &= 675 \\b &= 25.98\end{aligned}$$

$$28.91 - 25.98 = 2.93 \approx 3 \text{ ft}$$

The ladder will move 3 feet down the side of the house.

### 4. Looking Back

This problem was easy to solve and my first method worked for figuring out the problem. After looking at the problem I do not see an easier way to solve it. It would be quicker not using the visuals, but I like using the pictures so that I have a way to organize the information and it helps me make fewer mistakes.