Estimate the landing zone and do the math

You almost always have to design site-built stairs yourself because the number and height of the steps will vary with the landscape. Begin by drawing a side view of your site and adding dimensions (Fig. A). That usually means going through the calculations a few times to determine where the stairs will fall and to figure out how long your skirt and stringer material needs to be. This sounds complex, but if you work through it a few times and rely on your sketch, it’ll become clear.

**Here’s what to do:**

1. First determine the approximate height “X” (Fig. A). Start by estimating where you think the last stair will fall by using a 40-degree slope (Photo 1). Rest a straight board on the deck and level over to that spot and measure down to the ground. That’ll be the approximate height of the stairs, “X.”

2. Now find the approximate number of steps. Divide “X” by 7 in. (an approximate step height) and round off the remainder, up if it’s .5 or more, or down if it’s less than .5. That’ll give you an approximate number of risers (Fig. A). The actual recommended riser height is 6-1/2 to 8 in., but you’ll determine that later. If the riser height is too short, redivide “X” by 8 and start again.

On uneven ground, find the number of treads so you can find the exact stair landing point. Simply subtract 1 from the number of risers. (There’s always one fewer tread than risers, as you can see in Fig. B.) Then, multiply by 10.25 in., the ideal tread width for two 2x6s, to get the total run.

3. Measure the exact total rise (Photo 1). Divide the height (“X”) by your estimated number of risers to find the exact riser height. The figure will usually fall between 6-1/2 and 8 in., the ideal range. Use this figure for your stringer layout (Fig. B). If the riser height isn’t in this zone, add or subtract a riser and divide again. This will change the number of treads and shift the landing point, so remeasure the exact height and divide again.

4. Draw a sketch (Fig. B) to confirm the plan in your mind and lay out the first stringer (Photos 2 and 3) using the exact riser and tread dimensions and your framing square.

Plan to establish a solid base at the landing point. The base can be a small concrete slab, a small deck or even a treated 2x12 leveled in over a 6-in. gravel base. After you cut the stringers, use them as guides to position your landing.

Cut and mount the stringers by following our photos. In your layout (Fig. B), note that:

- The top tread is 3/4 in. shorter than the other treads.
- The bottom riser is 1-1/2 in. shorter than the other risers. Be sure to test-fit the first stringer (Photo 4) before you cut the others. If you made a mistake, you’ll at least be able to save the other two 2x10s.