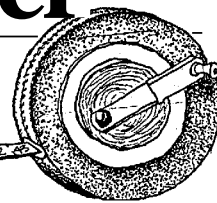




Measuring Up



by Jonathan Poore

Measuring is a lot like painting. Sure, anyone can hold a brush, but painting well takes understanding, practice and skill (or haven't you ever cut anything too short?). The same holds true for measuring a room or a houseful of rooms.

The first step in old-house restoration is to make a plan of action, and that calls for an accurate plan of the building. A set of measured drawings or plans helps in several ways:

— 1. It provides documentation of existing conditions for anybody's future reference. You'll need that, and maybe someday the present or future owners (or even historians) will, too.

— 2. It is essential for planning alterations. Accurate drawings and dimensions are a must when planning a new kitchen or bathroom, especially if the space is tight.

— 3. It provides clues to the house's past. Of all the good reasons to make measured drawings, discovering hidden surprises is the most exciting. Thicker interior walls in a certain area of the house might indicate that an extension was added, because it shows that what was once an exterior structural wall become an interior partition.

The drawings also might suggest the existence of a hidden, sealed-up fireplace, an unused dumb-waiter or a closed back stair. From experience, I can tell you that you never know what might suddenly strike you when you look at measured plans—even of the house you've been familiar with for years!

To prepare a set of plans, patience is more important than a degree in architecture. If you've got rudimentary drafting skills and can read an architect's scale, this article will tell you everything else you need to know.

Tools Required

If you'll be measuring only one or two rooms, a 25-foot tape is usually adequate. If you will be measuring a whole house, a 100-foot tape is useful because, to ensure accuracy, you'll want to take continuous, or running, dimensions.

The only other tools needed are a pad of paper (grid paper, if it makes it easier for you to sketch) and plenty of sharp pencils. A helper

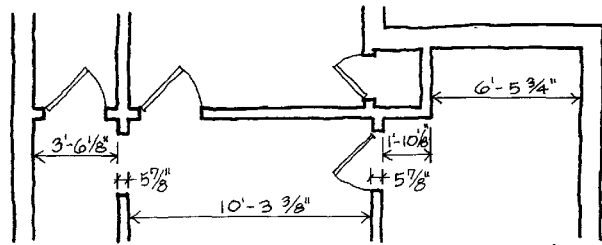
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is essential to hold the end of the tape. Two helpers are even better: One person holds the end of the tape; another unreeles and reads the tape; and the third person—someone who can write small and legibly—records the dimensions on the drawing.

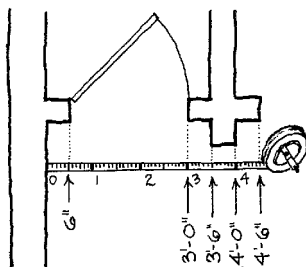
The Base Plan

You need a base plan on which to mark the measurements you take. The closer this plan is to scale, the easier it will be to use. The best base plan, therefore, is a set of original architectural drawings of the house. If these are actual blueprints, make a tracing of them on paper.

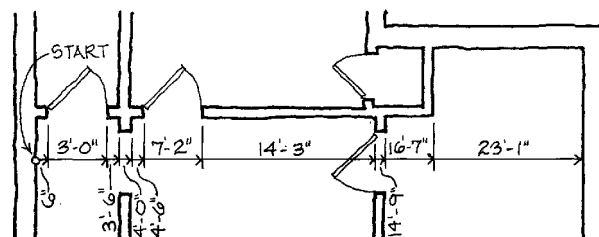
The key to any accurate measuring is taking running dimensions.



THE WRONG WAY (ROOM BY ROOM DIMENSIONS)



RUNNING DIMENSIONS



SYMBOLS FOR RUNNING DIMENSIONS

(It's hard to write on blueprint paper.)

It's more likely that a base plan will have to be drawn from scratch, by you, especially if the building has been altered since the original plans were prepared. Try to make your sketch plan as accurate as possible, as this makes measuring much easier.

Start by roughing out the basic room volumes in the right relationship to one another. Then fill in the details: closets, bumps and jogs in the walls, doors, windows and so on.

Basic Measuring Principles

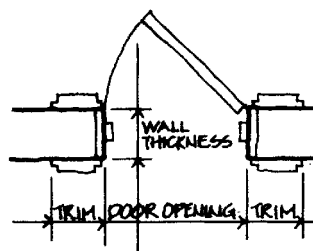
The key to any accurate measuring is to take running dimensions. Taking a running measurement means stretching the tape out along a series of points to be located and then reading the tape at each of these points—without ever moving the tape.

In most cases, each reading can be rounded off to the nearest inch. Don't worry—you won't introduce cumulative error this way, as you would if you kept moving the tape for each measurement. Even if a plan is drawn at a scale of 1/2 inch to 1 foot, the half-inch you might be off is not much more than a pencil thickness on the drawing (and a more typical scale for a plan is 1/4 inch to 1 foot. Even though each reading from the tape is being rounded off, no individual reading can be off by more than 1/2 inch, because you're taking a single measurement to that point.

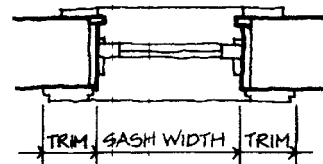
Had the same dimensions been taken individually, by moving the tape each time, enough cumulative error can creep in to throw the overall dimensions off by several inches. If an entire building is measured room by room without running dimensions, the cumulative error can amount to several feet.

The superiority of running dimensions can't be overemphasized. Whenever you move the tape, error is introduced because you can't hold the tape exactly at the point where the previous reading was taken.

Let's say the tape is off a mere 1/4 inch each time, and the tape has to be moved 10 times to accomplish one overall dimension. That could introduce as much as 2 1/2 inches of error overall. You can't round off, either; you have to squint and concentrate and take every dimension to the nearest fraction of an inch.



DOOR DETAIL



WINDOW DETAIL

There's yet another disadvantage to one-at-a-time measuring. As the plan is later drafted on paper based on those dimensions, even more error is introduced. Each time the scale is moved on the paper to the next dimension, it's impossible to place it exactly on the mark. Cumulative errors of this type can throw the overall dimension off several more (scale) inches.

You could add each of the dimensions together before marking them with the scale, but that's very tedious—and besides, it's too easy for arithmetic mistakes to creep in. Taking running dimensions solves the problem entirely.

Where to Start

Start measuring in areas with few obstructions and with intact exterior walls. Avoid starting in an area where walls have been paneled, furred out or otherwise altered. And for every subsequent dimension, when you have the option, start from an intact architectural element such as an exterior wall or a stair.

It's very important to hold the tape level and straight. Pull it tight so there is no sag. If the tape isn't straight and taut, you'll get considerable error in the dimensions.

Next, measure each room, taking running dimensions wherever possible. Always measure door openings on both sides of the wall. This accurately locates rooms in relation to the hall, and it also indicates wall thicknesses, which cannot be measured directly. Measuring door

openings from both rooms also shows whether walls align—something you tend to miss when just walking from one room to another.

To double-check accuracy, take a few redundant dimensions—the same dimension, but taken from a different starting point or from the other end of the room.

When one or two minor offsets prevent taking uninterrupted running dimensions, take an exact reading on the tape at the offset. Then move the tape over to a position from which you can continue the running dimension. Be sure to hold the tape at that exact reading. Try to avoid making too many offset measurements, of course, as they can introduce error if you're not exactly exact.

Know What You're Measuring

Doors and windows can be a little confusing to measure: Where do they begin and end? Don't be fooled by trim, and always be consistent from window to window and door to door.

The rule with doors is to always measure to the jamb. Don't include the projection of the woodwork trim. It's the jamb that indicates the door opening and the wall thickness.

For windows, the rule is that there is no rule. Just decide what dimension is critical and then measure each window the same way. Sometimes it helps to make a little sketch detail.

Coordinating Dimensions

Draw the plans for each floor on tracing paper or drafting film—both transparent. Then

you can overlay them. A good way to coordinate first-floor dimensions with second-floor dimensions is by locating the top riser of a stair in relation to both first-floor and second-floor dimensions.

In some houses this may be awkward—because the stair is U-shaped, for example. If so, go outside and see which windows align floor to floor. (Sight by eye or use a plumb bob if you need to.) Now that you know the relation of windows to each other, you can overlay the plans and see what else lines up.

Coordinating the first floor with the second may help you determine which walls are load-bearing and which are not. It may also show you where there might be a suitable chase for running wiring or plumbing (by looking for walls or furrowed-out spaces that line up).

Vertical Dimensions

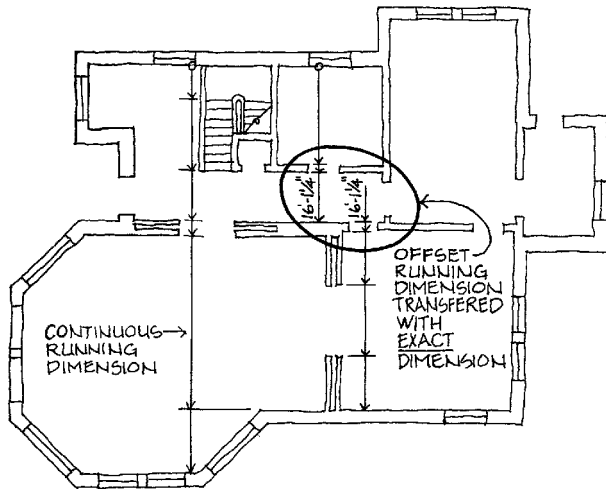
A 3/4-inch Stanley "Powerlock" tape is indispensable for measuring heights. To measure

a tall ceiling, stand the tape in the corner of the room and feed it right up the wall. With a 25-foot tape, you can stand on the floor (without a ladder!) and feed the tape up to a 15-foot ceiling height. The tape will even support itself freestanding in the middle of the room—which is useful for measuring beam heights, etc.

For greater heights, feed the end of the tape up the corner. You may need a helper with a long stick to keep the tape from falling. Of course, when all else fails, go get a ladder.

Now that you have a complete record of dimensions in the building, you can draw up actual architectural plans to *scale*. Draw in the same sequence that you measured: First, get down the big picture by drawing overall spaces; next, fill in the details. With an accurate set of plans, you'll find planning to be vastly easier. •

Jonathan Poore is an architect and an architectural consultant to The Old-House journal.



Drawings by Jonathan Poore