Using the Rise, Run, and Angle tables.

When choosing the geometry of your stair the unit rise and unit run, referred to as tread depth in the building codes, should always be proportioned to the human stride. Residential stairs should ascend at an angle or pitch between 20 and 38 degrees to assure the most comfortable walk for the age range and abilities of persons occupying homes.

The rule of proportion that best suits residential stairs is:

> The sum of two riser heights plus the run or depth of one tread should equal between 23-5/8" and 25-5/8".

Once you have determined the possible rise and run options from the tables check them in this simple formula and look up the angle in the angle table to make sure it is between 20 and 38 degrees.

Determining the geometry should always be done as part of the design process prior to construction. Your designer should be able to give you this information in advance for you to do comparative walking tests on any number of existing stairways to decide what is most comfortable and meets the design criteria for your home. However in existing buildings the designer is limited to the space that can be made available for the stairway. In either case the geometry of stairs is regulated by the building codes and you should consult with your local building official. The new model code standard developed and published by the International Code Council recognizes 7-3/4" as the maximum rise and 10" as the minimum run or tread depth.

To learn more about measuring rise and run in accordance with the building code please refer to our Visual Interpretations found on the codes & standards page of this site.