

Example: Using Similar Polygons in Billiards**Problem:**

A ball is sitting directly against the rail 35 inches from the corner pocket of a 50 inch by 100 inch pool table. At what distance from the corner should the ball hit in order to make it in the opposite corner pocket?

Solution:

When a pool ball hits the rail, it will rebound at the same angle, creating two similar triangles.

The distance from the corner pocket will be labeled x , since this is what we are trying to find.

Since the total side length is 100 inches, the remaining distance is 100 minus x .

Now we have two similar triangles and we can set up proportions to solve for x .

In all of our proportions we will use the dimension on the red triangle on the top and the dimension of the yellow triangle on the bottom.

The ratio of 35 to 50 equals the ratio of x to 100 minus x .

Cross multiply to get 35 times the quantity 100 minus x equals 50 times x .

Distribute. 3500 minus $35x$ equals $50x$.

Solve this equation to get 3500 equals $85x$ which means that x is approximately 41.18.

The ball should be hit about 41.18 inches from the corner pocket in order to make it in the opposite pocket.