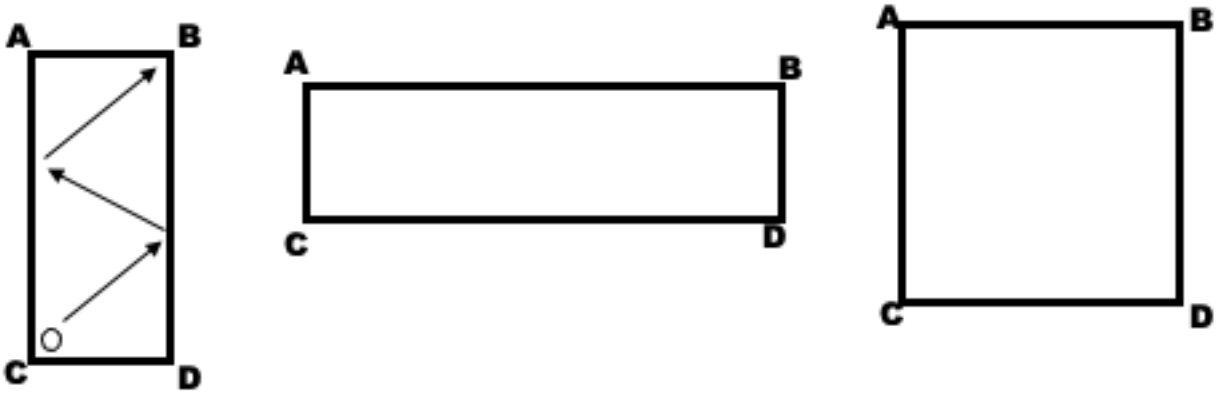
What's Your Angle

Level D

Perplexing Paula Pocket loves to play pool. Besides being a great pool player, she makes pool tables. The pool tables are indeed perplexing. They are all rectangles of different sizes with only four pockets. The pockets are at the four corners of the tables, labeled in the orientation shown below.



What makes these tables most interesting is the different games Paula plays on them. She picks a table and lays the cue ball right in front of Pocket C. She challenges her opponent to guess the pocket where the cue ball will drop. Then she always strikes the ball at a 45-degree angle to the side of the table. The cue banks off different sides of the table until it finally drops in one pocket. If you just guess, you have a 1 in 4 chance of guessing the right pocket. But Paula also asks you to predict the number of times the ball will bank off a side before dropping in a pocket.

Remember, she has almost an unlimited number of tables with different dimensions. Since Paula doesn't like fractions, all her tables have whole-number dimensions in feet.

You want to be able to beat Paula at her own game. Determine a strategy that you can use to play with Paula. A successful strategy would enable you to accurately predict the number of times a cue ball would bank off a wall and exactly which pocket it would fall into, once Paula has picked a table and given you the dimensions.

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