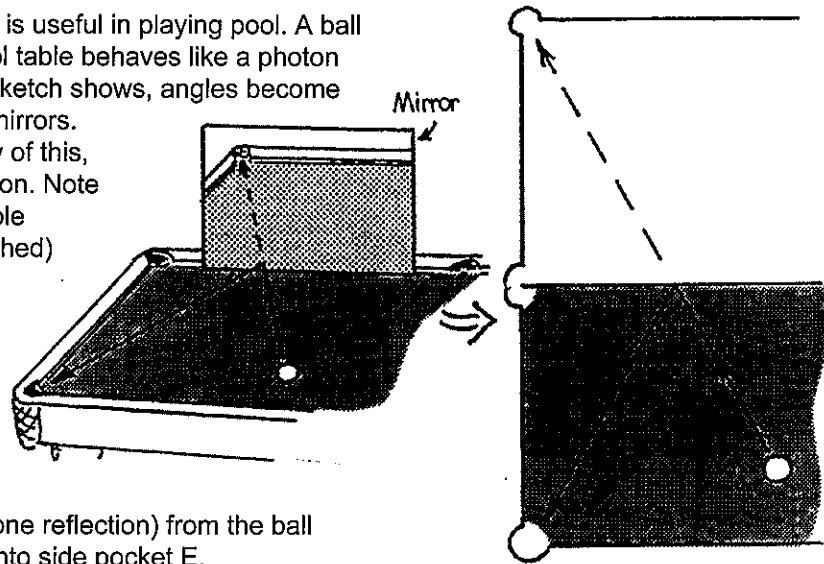


CONCEPTUAL *Physics* PRACTICE PAGE

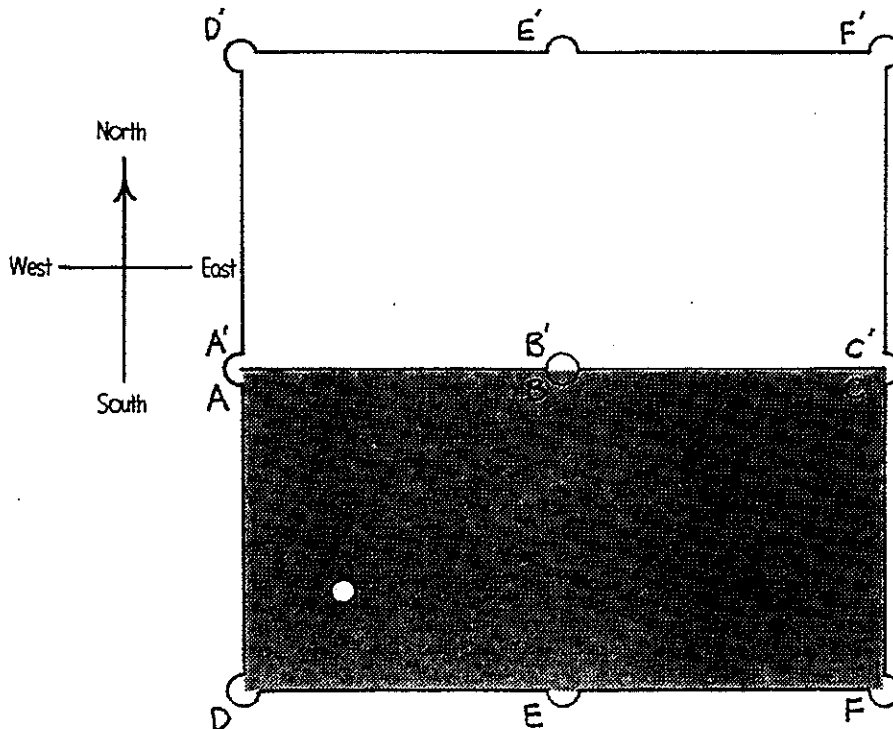
Chapter 28 Reflection and Refraction *Pool Room Optics*

The law of reflection for optics is useful in playing pool. A ball bouncing off the bank of a pool table behaves like a photon reflecting off a mirror. As the sketch shows, angles become straight lines with the help of mirrors.

The diagram shows a top view of this, with a flattened "mirrored" region. Note that the angled path on the table appears as a straight line (dashed) in the mirrored region.



1. Consider a one-bank shot (one reflection) from the ball to the north bank and then into side pocket E.

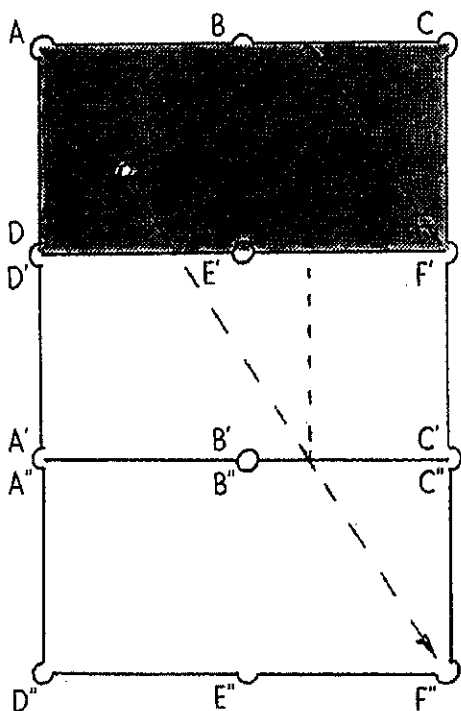


Mirrors, actual or imagined, improve your pool playing!



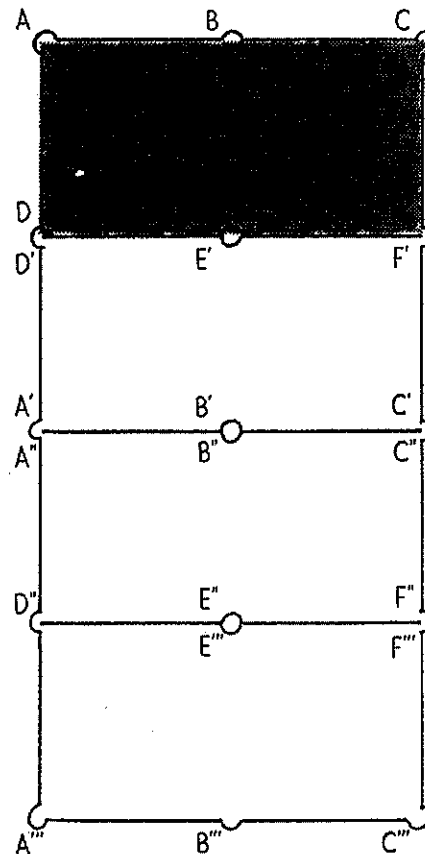
- a. Use the mirror method to construct a straight-line path to mirrored E'. Then construct the actual path to E.
- b. Without using off-center strokes or other tricks, can a one-bank shot off the north bank put the ball in corner pocket F? _____ Show why or why not using the diagram.

Chapter 28 Reflection and Refraction
Pool Room Optics—continued



2. Consider the left diagram, a two-bank shot (two reflections) into corner pocket F. Here we use two mirrored regions. Note the straight line of sight to F'' and how the north-bank impact point matches the intersection between B' and C'.

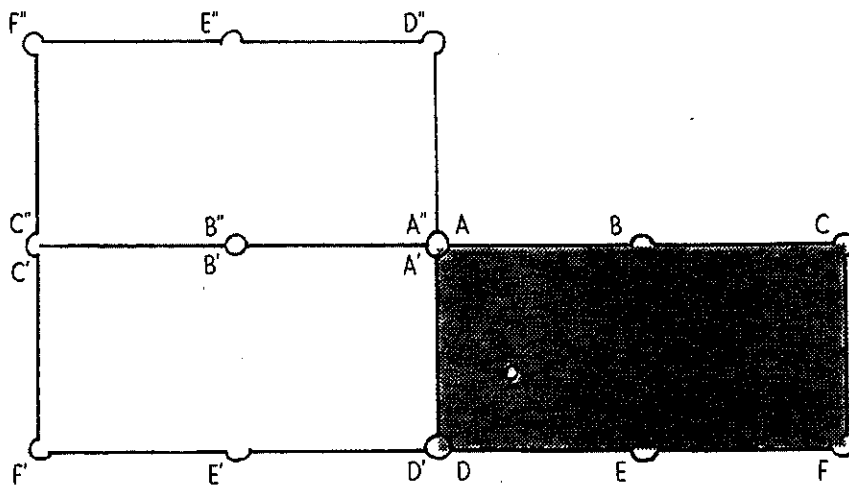
a. On the same diagram to the left, construct a similar path for a two-bank shot to get the ball in the side pocket E.



3. Consider above right, a three-bank shot into corner pocket C, first bouncing against the south bank, then to the north, again to the south, and into pocket C.

- a. Construct the path. (First construct the single dashed line to C''.)
- b. Construct the path to make a three-bank shot into side pocket B.

4. Let's try banking from adjacent banks of the table. Consider a two-bank shot to corner pocket F (first off the west bank, then to and off the north bank, then into F). Note how our two mirrored regions permit a straight-line path from the ball to F''.



Hewitt
 Draw it!