

AN AIMING POINT METHOD FOR POOL

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This method is based on the player visualizing two points on the object ball and the distance between them. It is easy to learn and use, and may be particularly useful for those new to the game. This paper describes the method, called here the "Pocket Intersection Method" or PIM.

A quick description is given first below, then more detail.

Summary of the Method (Figure 1)

Finding the aiming point is a simple four-step process. Referring to Figure 1, these steps are:

1. Find the point where a line from the cue ball will intersect the object ball.
2. Find the point where a line from the pocket (or other target) will intersect the object ball.
3. Estimate the distance between these two points.
4. Double this distance to find the aiming point.

This usually takes about 20 seconds.

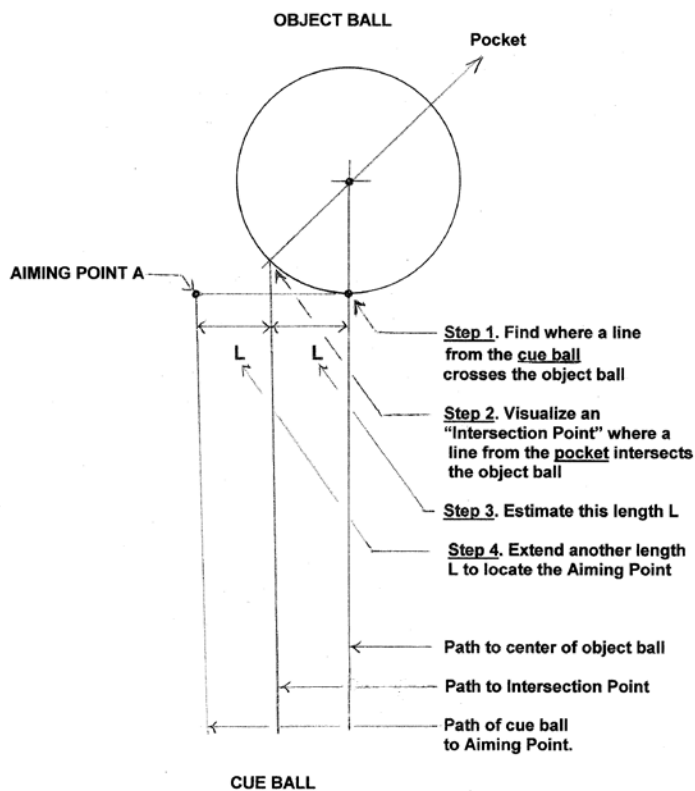


FIGURE 1. FIND THE AIMING POINT IN 4 EASY STEPS

Introduction

The discussion and diagrams given here assume a pocket billiards game like 8-ball or 9-ball. The PIM method, however, can be used for any billiards game. There can be pockets or not. The balls can be of any size. The object ball can be directed at any part of a pocket, at a point on the cushion, or at another ball. The cue ball and object ball can be anywhere on the table (with an exception noted below).

The aiming point determined by this method does not include the effects of such factors as cue ball speed and English. The PIM is intended to provide a simple way to make a good first estimate of the aiming point. The effect of other factors must then be taken into account before taking the shot.

The rest of this document gives:

- A more complete description of the PIM method.
- Examples.
- Adding a ghost ball.
- Finding the aiming point when the cue ball and object ball are close together (the exception noted above, when use of the PIM is not recommended).
- Using "cue tip widths" for measuring the distance to the aiming point.
- The theory on which the Pocket Intersection Method is based.

More Complete Description of the PIM Method (Figure 2)

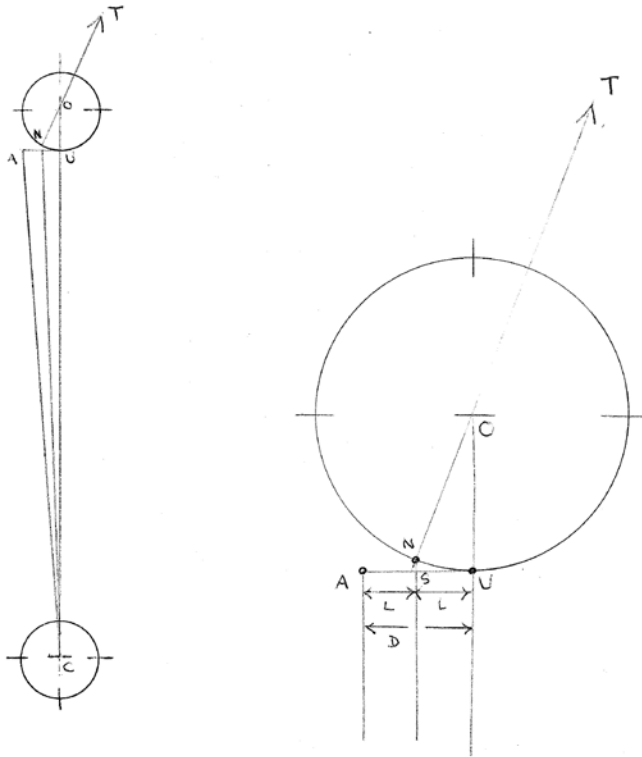


FIGURE 2. MORE INFORMATION ABOUT THE PIM

Step 1 of the PIM method is to imagine a line from the center of the cue ball to the center of the object ball. This is line CO, shown in Figure 2, which crosses the object ball at point U.

In Step 2, the player visualizes a line from the object ball target, point T, through the center of the object ball O and intersecting the outer edge of the object ball at point N. Point N is also the contact point, where the cue ball must strike the object ball in order to send the object ball to the target. Figure 2 also shows a point S, directly below N, on the line CN from the cue ball. Use of point S simplifies the discussions and figures given here.

Step 3 is to visualize line US. The length of US is termed L.

Finally, in Step 4, you imagine another line, extending from US and also of length L. The end of this line is the aiming point A. The length of USA (!) is termed D.

If the cue ball is now stroked along line CA to the aiming point A, it will strike the object ball at point N. The object ball will then (we all hope) go into the pocket (or wherever you wished). If it does not, the most common cause is that the length of L was underestimated. It is better to estimate L a little long, thus aiming further away from the object ball. This is equivalent to assuming the cut angle is slightly greater than it appears.

Examples (Figure 3)

In Diagram #1 of Figure 3, the cut angle is 30° . With this cut, the aiming point A, from the player's perspective, is located very close to the edge of the object ball. This is a fortunate location, since aiming at an edge is easier than aiming at a point inside or outside the object ball. If the cut is greater than 30° , the aiming point will be outside the object ball. Cuts of less than 30° result in aiming points inside the object ball.

The example of Diagram #2 has a 20° cut, and an aiming point slightly inside the object ball.

Diagram #3 displays a fine cut, 12° . It can be difficult to locate a clear aiming point for fine cuts because the distances L and D are short, short distances are hard to estimate, and if an error is made in estimating the length of a short line, that error will be magnified when taking the shot.

In Diagram #4 the cut is even finer, 6° . The best approach for playing fine cuts may be to memorize the cut and resulting aiming point of an example or two, then modify the shot at hand accordingly. Diagrams #3 and #4 provide candidate examples.

With a 45° cut, as in Diagram #5, the aiming point is outside the object ball. The normal PIM approach is to estimate the location of the aiming point then remember A for later in the shot setup routine. There is another approach to remembering A, shown in Diagrams #5 and #6. In this alternate approach, you remember the distance to the aiming point from the edge of the object ball rather than the center. This "edge-length" is termed H in Diagrams #5 and #6.

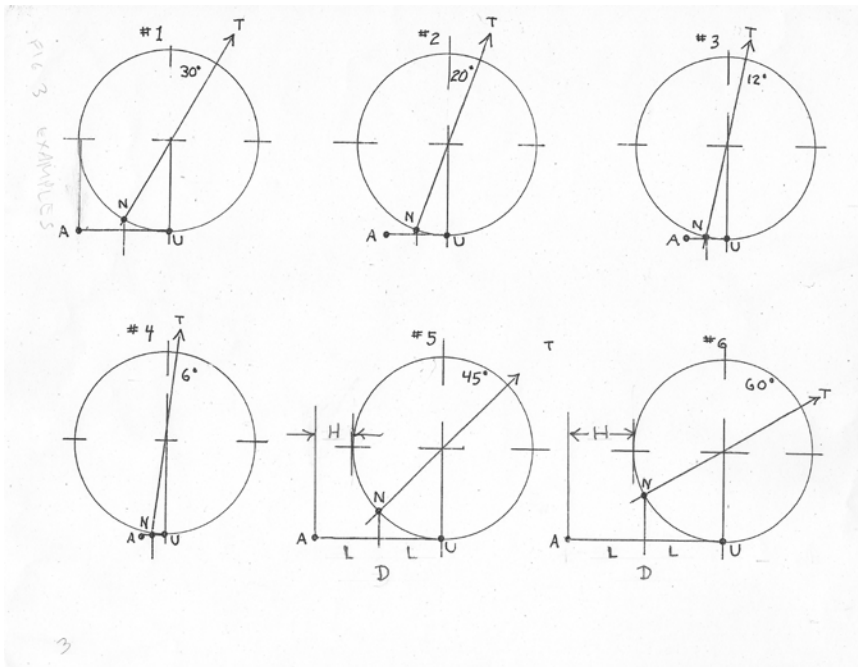


FIGURE 3. EXAMPLES OF THE PIM AIMING POINT FOR VARIOUS CUT ANGLES

Adding a Ghost Ball (Figure 4)

Figure 4 displays an imaginary “ghost ball.” The ghost ball has its center G on the line from the target T extending through the center of the object ball O. The ghost ball is also tangent to the object ball at N. When using a ghost ball to assist aiming, the cue ball should be struck on a line through the ghost ball center, causing the cue ball to occupy the position held by the ghost ball.

Important facts about the ghost ball are: (1) the center of the ghost ball is the best possible initial aiming point; and (2) an aiming point developed by any method (such as the PIM) must be on a line from the cue ball through the ghost ball center.

It can be difficult to visualize the ghost ball and its center, particularly as the cue and object balls become distant from each other. This is one reason alternatives have been developed, such as the PIM.

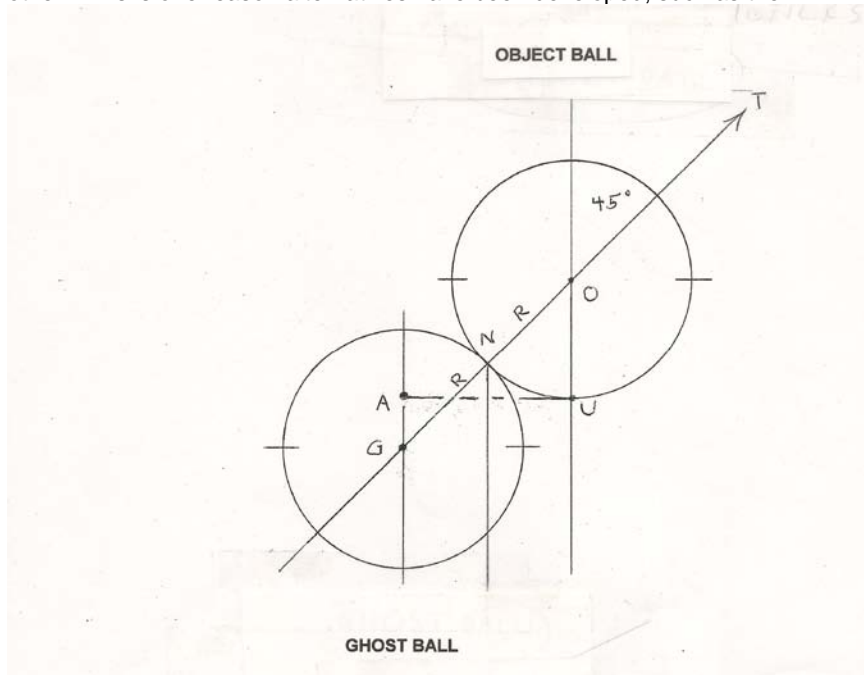


FIGURE 4. ADDING A GHOST BALL

Finding the Aiming Point When the Cue Ball and Object Ball are Close Together (Figure 5)

The PIM method assumes that the three lines from the cue ball towards the object ball, CO, CN, and CG, are parallel. They cannot be, of course. Early in PIM development, a series of scale drawings was prepared to determine the effect of this assumption upon PIM accuracy. These drawings showed that the distance between the cue ball and object ball affect the PIM only when these two balls are less than 15" apart. Figure 5 displays such a situation.

In Figure 5, the cue and object balls are a scaled distance of 6" apart. Point A prime (A') is the aiming point determined by the PIM. Point A is the true aiming point, on an extension of line CG through the center of the ghost ball. The aiming error E is the distance between A and A'. The error is more than ¼" in this example, much too large for an accurate shot.

Using “Cue Tip Widths” to Remember the Aiming Point Location (Figure 6)

A useful approach for measuring distances from the object ball center and edge to the aiming point was discovered during PIM development. In this approach, distances are measured using the width of a cue tip as the basis. Diagram #1 of Figure 6 displays the concept, where W is the cue tip width (using the average width of ½"). In Diagram #1 the aiming point A is 2-¼ cue tips away.

In Diagram #2, point N is about ¾ cue tips from the object ball center. A is a bit over 1-½ cue tips away.

Diagram #3 shows a fine cut example. Here the aiming point is exactly 1 cue tip away, a good example to memorize. An even finer cut is shown in Figure #4. Here the intersection point N is ¼ of a cue tip away, so the aiming point A will be at ½ a cue tip.

