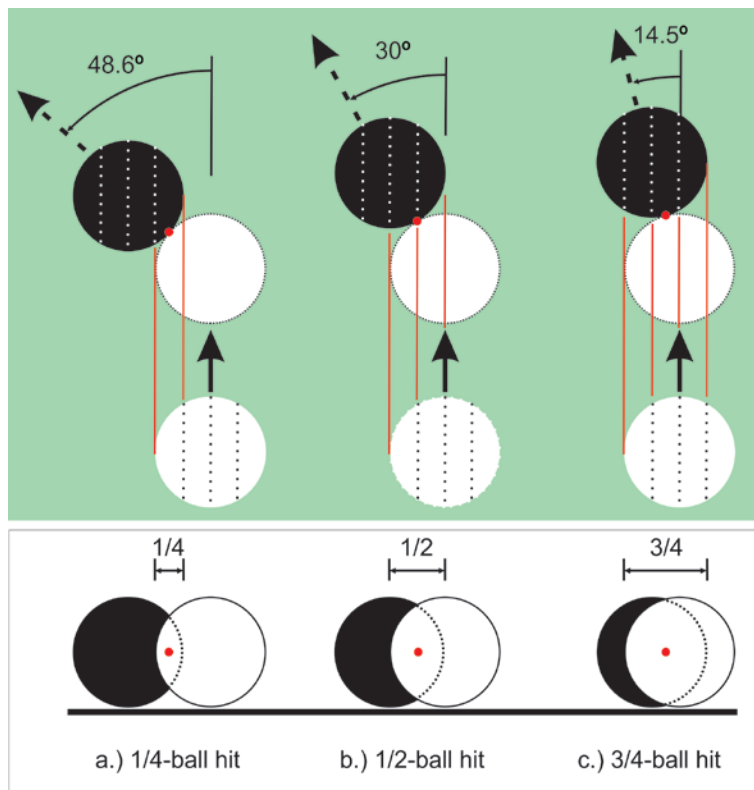


Supporting narrated video (NV) demonstrations, high-speed video (HSV) clips, technical proofs (TP), and all of my past articles can be accessed and viewed online at [billiards.colostate.edu](http://billiards.colostate.edu). The reference numbers used in the articles help you locate the resources on the website. If you have a slow or inconvenient Internet connection, you might want to view the resources from a CD-ROM or DVD. Details can be found online at: [dr-dave-billiards.com](http://dr-dave-billiards.com).

This is the first article in a series dealing with “[How to Aim Pool Shots \(HAPS\)](#),” a three-disc instructional-DVD collection I recently created with fellow BD columnist Bob Jewett. HAPS covers cut-shot aiming systems, how to adjust for cut-induced throw, how to aim without guessing when using english (sidespin), and how to aim specialty shots including caroms, kisses, combos, rail cut shots, and elevated cue shots. Also included are numerous simple but effective systems for aiming kick and bank shots. An outline of the entire HAPS series along with video excerpts from each DVD can be viewed online at: [dr-dave-billiards.com/aiming](http://dr-dave-billiards.com/aiming). Over the next few months, I’ll present topics from the first DVD: “[HAPS I - Aiming Systems, and Aiming with Sidespin](#).”

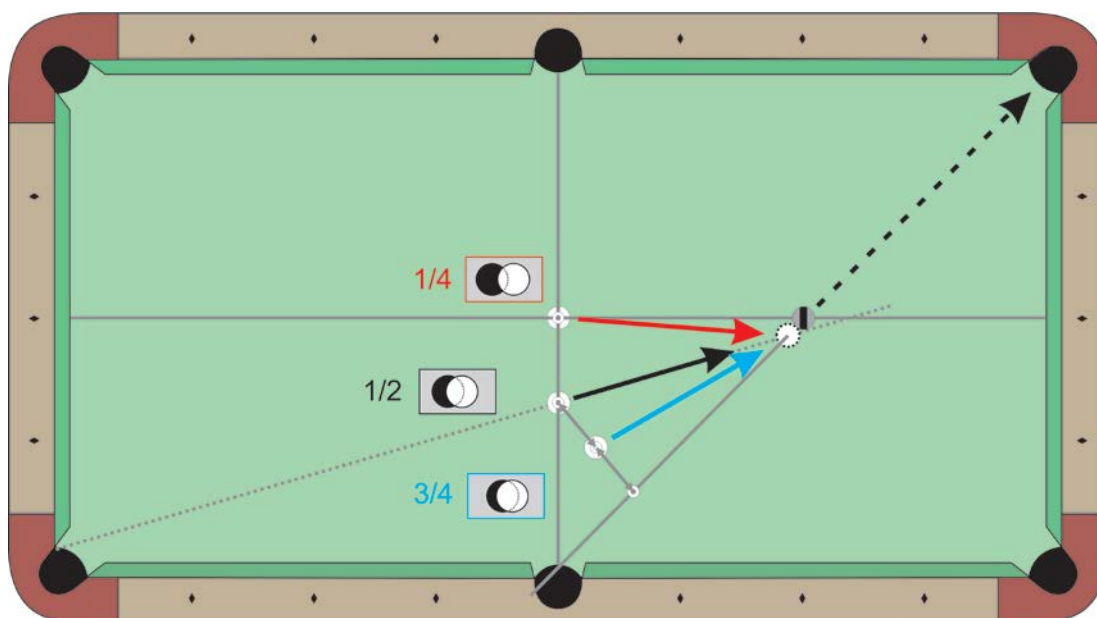
This month’s article deals with “fractional-ball aiming,” which is the basis of several “aiming systems” taught by some pool instructors. The basic concept is to think about all pool shots in terms of what is called “ball-hit fraction.” As illustrated in bottom of **Diagram 1**, this is the percentage overlap of the cue ball (CB) and object ball (OB) at contact. It can help to become familiar with the standard ball-hit fractions of  $\frac{1}{4}$ ,  $\frac{1}{2}$ , and  $\frac{3}{4}$  because they can be useful as visual references. As shown in Diagram 1b, with a  $\frac{1}{2}$ -ball hit, the CB overlaps  $\frac{1}{2}$  of the OB, and the center of the CB is aimed exactly at the edge of the OB. This “center to edge” (CTE) alignment makes a  $\frac{1}{2}$ -ball hit very easy to visualize and aim. The result is a  $30^\circ$  cut angle. Shots close to a  $\frac{1}{2}$ -ball hit are very common in typical game play because the angle is not too large to make the shot too difficult, and yet the angle is large enough to allow a wide range of CB control options.



**Diagram 1** Standard Ball-Hit Fractions

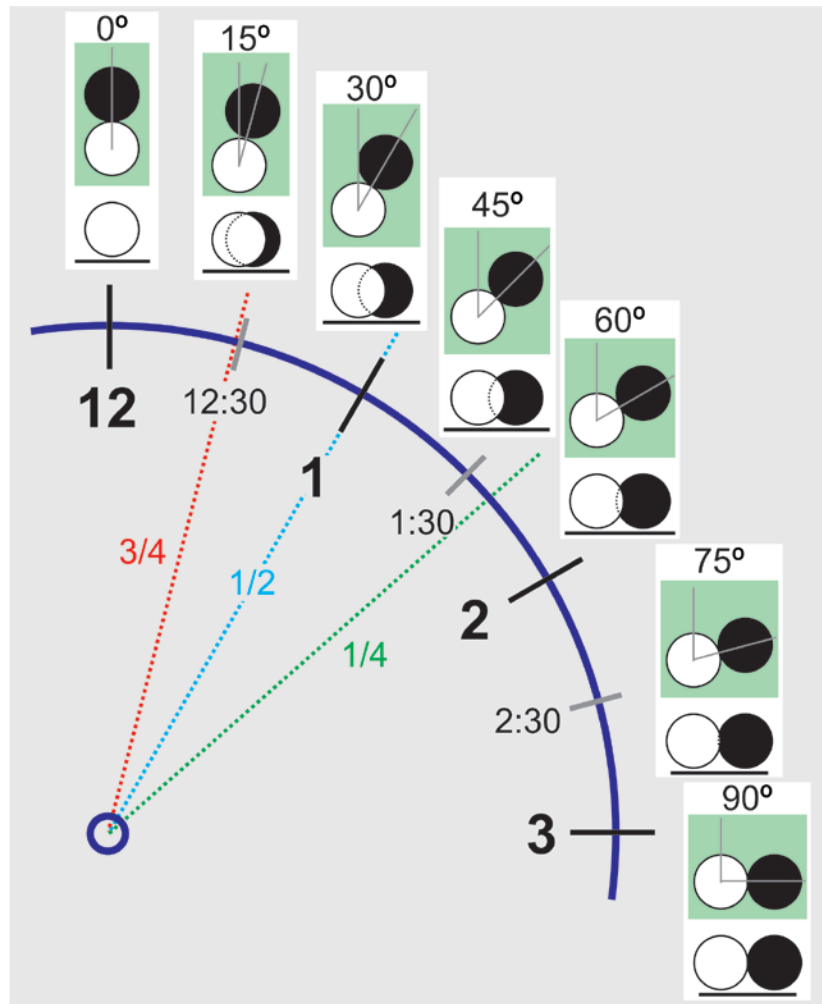
With a  $\frac{1}{4}$ -ball hit (Diagram 1a), the CB overlaps only  $\frac{1}{4}$  of the OB, creating between a  $45^\circ$  and  $50^\circ$  cut, a relatively thin hit. Here, the CB is aimed a  $\frac{1}{4}$ -ball outside the edge of the OB, with the inside  $\frac{1}{4}$  point of the CB aimed at the edge of the OB. With a  $\frac{3}{4}$ -ball hit (Diagram 1c), the CB overlaps  $\frac{3}{4}$  of the OB, creating about a  $15^\circ$  cut, a relatively full hit. Here, the CB is aimed at the outside  $\frac{1}{4}$  point of the OB. Again, all pool shots can be categorized as close to or between each of these benchmark shots. And this categorizing can help some people develop their aiming ability more quickly.

**Diagram 2** shows three shots you can set up at a table if you want to practice visualizing and pocketing the standard fractional-ball aims, with the OB on the foot spot for each shot. For the  $\frac{1}{2}$ -ball hit, the CB is located on a line through the edge of the OB and the inner part of the corner pocket. At the table, it helps to mark each ball position with a self-adhesive hole-reinforcement label (a "little white donut"). A  $\frac{1}{4}$ -ball hit can be created by placing the CB at the center of the table. To locate the CB position for a  $\frac{3}{4}$ -ball hit, first place a donut anywhere along the line from the side pocket to the corner. You can use your cue to help visualize this line. Then place a donut exactly between this donut and the  $\frac{1}{2}$ -ball hit donut. That locates the required CB position for a  $\frac{3}{4}$ -ball hit. Online video **NV E.1** demonstrates the details of how to quickly and easily set up and practice these standard ball-hit-fraction shots at a table. On the HAPS-I DVD, we show how you can use your hands and cue to approximate cut angles and ball-hit fractions at the table, and we show examples of how this technique can be applied while aiming shots over a wide range of angles, using the standard ball-hit fractions as references.



**Diagram 2 Ball-Hit Fraction Practice Shots**

**Diagram 3** relates a clock-face to the standard fractional-ball aims and other cut angles. A clock face provides a good visual reference for angles because each hour is  $30^\circ$  and each half hour is  $15^\circ$ . Remember, a  $\frac{3}{4}$ -ball hit is a cut of about  $15^\circ$ , a  $\frac{1}{2}$ -ball hit is  $30^\circ$ , and a  $\frac{1}{4}$ -ball hit is a few degrees more than  $45^\circ$ . If you could easily identify the angle of a cut, this diagram would help show you how much of the OB you would need to hit to pocket the shot. In fact, on the HAPS website (under Disc I in the "Online Resources" section) there is a "cut-angle estimation" resource page that includes a template you can print and use at the table to measure cut angles. Like Diagram 3, the template also illustrates the ball-hit fractions (amounts of CB overlap) required for a wide range of cut angles. Using a template like this is not legal in actual play, but it can be helpful when working on improving your aim visualization skills.



**Diagram 3** Clock-Face Illustration of Ball-Hit Fractions

I hope you enjoy my series of articles dealing with the “How to Aim Pool Shots (HAPS)” DVD series. If you want to view video excerpts from the entire series, check out online videos **NV E.1** through **NV E.8**. Enjoy!

Good luck with your game,  
Dr. Dave



- [NV E.1](#) – Fractional-Ball Aiming, from HAPS I
- [NV E.2](#) – Back-Hand (BHE) and Front-Hand English (FHE), from HAPS I
- [NV E.3](#) – Using "Gearing" Outside English to Eliminate Throw, from HAPS I
- [NV E.4](#) – Carom-Shot Trisect-Draw System, from HAPS II
- [NV E.5](#) – Combination Shot Throw Adjustment, from HAPS II
- [NV E.6](#) – Rail Cut Shot Aiming, w/ and w/o Sidespin, from HAPS II
- [NV E.7](#) – Mirror Kick-Shot Aiming System, from HAPS III
- [NV E.8](#) – 1/3-More-Than-Twice Bank-Shot Aiming System, from HAPS III

PS:

- I know other authors and I tend to use lots of terminology, and I know not all readers are totally familiar with these terms. If you ever come across a word or phrase you don't fully understand, please refer to the [online glossary](#) on my website.

*Dr. Dave is author of "[The Illustrated Principles of Pool and Billiards](#)" book and DVD, and co-author of the "[Video Encyclopedia of Pool Shots \(VEPS\)](#)," "[Video Encyclopedia of Pool Practice \(VEPP\)](#)," "[How to Aim Pool Shots \(HAPS\)](#)," and "[Billiard University \(BU\)](#)" instructional DVD series.*