
Note: Supporting narrated video (NV) demonstrations, high-speed video (HSV) clips, and technical proofs (TP), and all of my past articles, can be accessed and viewed online at billiards.colostate.edu. The reference numbers used in the article 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.

This is the fourth article in a series on pool rules. The series features shots from a pool rules quiz I recently created with fellow BD columnist Bob Jewett. The quiz can be viewed online in **NV B.61**. In addition, **NV B.62** provides answers and brief explanations for each shot, while **NV B.63** provides a more thorough instruction in each foul category. All calls in the quiz and this series of articles are based on the internationally-recognized **World Standardized Rules** published by the World Pool-Billiards Association (WPA). The complete set of rules can be viewed online at www.wpa-pool.com. Last month, we looked at rail cut shots, where the object ball is either close to or frozen to a rail. This month, we will look at cases where it is not clear whether or not the cue ball (CB) hits the desired object ball (OB) first.



[NV B.61](#) – Pool rules quiz for referees and players, with Bob Jewett

[NV B.62](#) – Answers to pool rules quiz for referees and players

[NV B.63](#) – Instruction for pool rules quiz

Here is the pertinent WPA rule concerning contacting the correct ball first:

6.2 Wrong Ball First

In those games which require the first object ball struck to be a particular ball or one of a group of balls, it is a foul for the cue ball to first contact any other ball.

Diagram 1 shows an example where a violation of *Rule 6.2* might easily be missed by an uninformed player. The shot numbers in the diagram correspond with those in the quiz video. In **Diagram 1**, the 3-ball blocks the direct path for the CB to pocket the 2-ball, so the rail must be struck first. With a shot like this, with the 2-ball and 3-ball fairly close together, it can be very difficult to see directly whether or not the CB hits the 2-ball or the 3-ball first off the rail. The key to detecting which ball is hit first is to understand how the CB should react. If the CB deflects off the 2-ball first, it will then deflect off the 3-ball in the 3-ball tangent-line direction (see **Diagram 1a**). However, if the CB hits the 3-ball first, the CB will then deflect off the 2-ball along the 2-ball tangent line (see **Diagram 1b**). Shot “54” (**Diagram 1a**) is fair because the CB obviously hits the 2-ball first, as required. With shot “48” in the quiz video (in part 5 of **NV B.63**), the CB actually heads slightly forward of the 2-ball tangent-line direction immediately because the CB hops slightly and hits the 2-ball above its equator (see **HSV B.37** for exaggerated examples of this effect). And the topspin follow action takes the CB even farther forward. But because the CB heads much closer to the expected 2-ball tangent line than the expected 3-ball tangent line, the shot is obviously a foul, because the wrong ball was hit first.

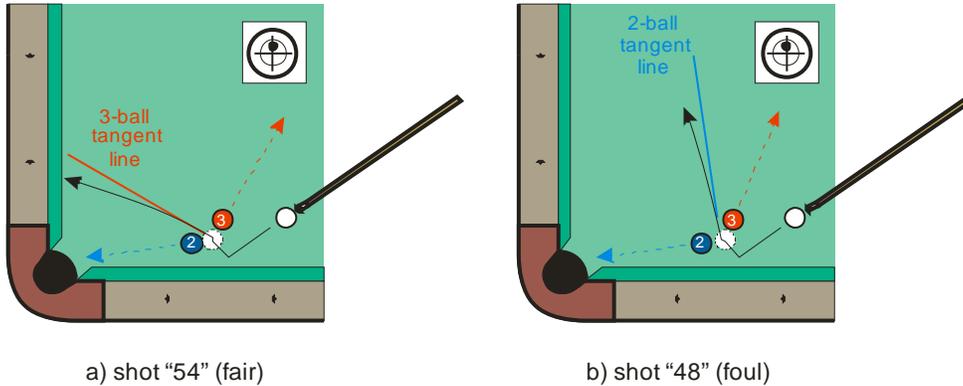


Diagram 1 Rail-first shot on 2-ball



HSV B.37 –jump shot over-cut effect and examples

Diagram 2 shows another “Which ball was hit first?” example where two balls are very close together. In this shot, the 8-ball must be hit first for the shot to be legal (e.g., if you’re playing 9-ball, or 8-ball and shooting “solids”). Unfortunately, to make this shot, the CB will be very close to (nearly touching) the 9-ball when it hits the 8-ball. As with the shot in Diagram 1, it is extremely difficult (if not impossible) to see directly which ball is hit first. But as before, if we understand tangent lines and the expected motion of the CB, we can determine whether or not the shot is a foul. With shot “7” (see Diagram 2a) the CB clearly leaves along the 9-ball tangent line, before the path curves slightly due to the draw. Shot “21” (see Diagram 2b) is the same as shot “7,” but here a foul is committed because the 8-ball is hit first. There is no doubt about this because the CB leaves in the 8-ball tangent-line direction. Isn’t it amazing how much difference a fraction of a millimeter can make in a shot like this? Not only does the CB head in a radically different direction, the tiny difference in aim causes you to lose a game you would otherwise be on the verge of winning! Good luck trying to argue your way out of this one with a knowledgeable opponent (if you hit the wrong ball first). The physics is very clear in this example, provided you understand it.

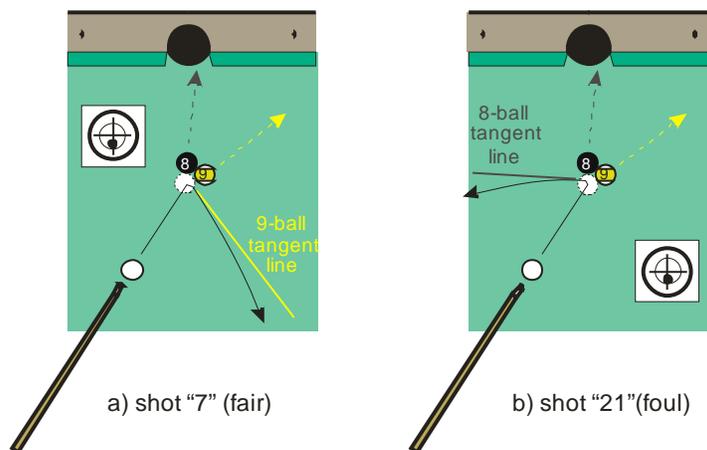


Diagram 2 8-ball shot with nearby 9-ball

You can view demonstrations and explanations of all of the shots in Diagrams 1 and 2 (and many other related shots) in part 5 of **NV B.63**. The video includes the appropriate ruling (fair or foul) and the reason behind each ruling. Be sure to watch the videos online. The super-slow-motion clips included really help visually reinforce the topics and examples covered in this article.

Well, I hope you are enjoying and benefiting from my series of articles dealing with pool rules. Please encourage all of your pool-playing friends, teammates, and league members to take the quiz and view the instructional videos online. If people had a better understanding of all of the rules and how they are applied, maybe there would be fewer “differences of opinion” and “heated debates” during league night. Next month, we will look at several other miscellaneous fouls not covered in my previous articles.

Good luck with your game,
Dr. Dave

PS:

- If you want to refer to any of my previous articles and resources, you can access them online at billiards.colostate.edu.
- I know other authors and I tend to use lots of terminology (e.g., squirt, throw, stun, impact line, etc.), 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.
- I want to thank Jim Valasina. He graciously proof-reads my articles every month to help find errors and make suggestions. My article quality is better as a result of his efforts. Thanks again Jim!

Dr. Dave is author of the book, DVD, and CD-ROM: “[The Illustrated Principles of Pool and Billiards](#),” and the DVD: “[High-speed Video Magic](#).”