QUIZ: IS YOUR TABLE GAME OPERATIONAL KNOWLEDGE UP TO PAR?

By Bill Zender

Take a few minutes from your important day and test your knowledge of issues that affect the performance of today's table games. Please answer the following eight questions and an additional bonus question. The answers follow, along with citable sources.

1. What primary factor could lead to excessive expense when offering rebates on loss? (10 points)

2. What is the actual cost of a $5 "match play" coupon, and approximately how many hands will the coupon customer have to play at $5 before the casino can expect to break even? (10 points)

3. Standing in the pit, you watch a blackjack customer split 9s against the dealer's Ace in a six-deck game. Is that considered a "good" or "bad" strategy play, and if bad, what would it cost the player as a percentage of his/her bet? (10 points)

4. What are the top five key ingredients that go into the final determination of a table game's continuing hold percentage range? (10 points)

5. There appears to be some reluctance with casino executives regarding the use of continual shuffling machines (CSMs) in blackjack. Some executives believe the machines greatly reduce the game's mathematical edge. Is this condition true, and if so, by how much is blackjack's house advantage reduced? (10 points)

6. There has always been some controversy over whether talented roulette dealers can influence the roulette ball's final pocket placement. Some dealers claim they can hit wheel sections while others claim they can accurately hit a specific color. Is this theory "true," and what percentage of advantage would a dealer/player collusion scam actually earn if the dealer could drop the ball within 32 numbers? (10 points)

7. In card counting, the indice for the hand 16 vs. 10 is equal to or greater than a true count of "0," which instructs the player to stand. This means that at an even or "zero" count, the player must stand on his 16. However, basic strategy tells us that the best play is to hit on 16 vs. 10. Why is there a difference, and which strategy is correct? (10 points)

8. Many casino executives have experienced undesirable, but temporary losses to higher wagering customers. What statistical tool can the savvy executive use to help him understand his casino's range of risk for different games at different betting levels? (10 points)

Bonus Question: What is the actual cost of a "free bet" offer, and how many hands will the free bet customer have to play at that same bet value before the casino can expect to break even? (20 points)

Answers

1. *What primary factor could lead to excessive expense when offering rebates on loss?* (10 points)

Based on James Grosjean's *Beyond Counting* (2009), page 155, the major factor is a combination of high game volatility and low house advantage. For example: The game of baccarat is fairly suitable for offering rebates on loss as a playing incentive. Even though baccarat is subject to a low house advantage—approximately 1.2 percent—the game's volatility factor is also low at 0.92. The low volatility is due to winning and losing even money, and the 5 percent commission charged to winning bank wagers. Rebating blackjack can run into trouble even though the volatility factor is low at approximately 1.1. Because of his hand strategy errors, the average blackjack customer might play and provide the house with a mathematical advantage of 1.3 percent, but the smart player might reduce the H/A down to 0.3 percent (depending on number of decks and rules), creating an expensive situation for the casino. In a case where rebates are offered to dice customers, this situation rarely is worthwhile for the casino. The house advantage on the pass line and come are relatively low at 1.4 percent, while the use of multiple odds greatly increases the volatility factor, which could rise quickly to a factor of 21 if the casino offers 20X odds. Take 10 points if you got both high volatility and low house advantage right. Also, give yourself full credit if you mentioned time as one of the factors. Rebate programs are less costly when conducted over longer periods of time. Shorter qualifying periods, such as trip to trip, greatly increase the expense of the

rebate. For more information on rebate, go to www.jimkilby.com and check out Kilby's Casino Marketing Manager 4.0 software.

2. *What is the actual cost of a $5 "match play" coupon, and approximately how many hands will the coupon customer have to play at $5 before the casino can expect to break even?* (10 points)

This exact situation is detailed in Anthony Lucas and Jim Kilby's *Principles of Casino Marketing* (2008), pages 73-74. Lucas explains that the $5 match play coupon, along with a $5 casino chip wager, cost the casino $2.43. This requires the player to wager an additional $270 (at a H/A of 1 percent) before the casino can expect to break even to the coupon cost. If the customer were to continue playing at $5 per hand, it would require him to play 54 hands, in addition to the coupon hand, before the casino can start to see any positive return. When considering most coupon players "hit and run," how can casino marketing expect a positive return from a match play promotion used to entice table game play? Give yourself 5 points if you thought the cost was half the coupon value, and another 5 points if you thought it would take at least a half hour to get even for the cost.

3. *Standing in the pit, you watch a blackjack customer split 9s against the dealer's Ace in a six-deck game. Is that considered a "good" or "bad" strategy play, and if bad, what would it cost the player as a percentage of his bet?* (10 points)

Peter Griffin, in his book *Extra Stuff: Gambling Ramblings* (1991), pages 141-142, points out that a large portion of the casino mathematical advantage in blackjack is created by the playing strategy errors of the customer. In the above-mentioned situation, a blackjack player who opts to split his two 9s versus the dealer's up-card of Ace, is given approximately 2.87 percent of the dollars he wagered back to the house. This is in addition to the 0.3 percent to 0.7 percent he would normally give up based on basic strategy play. Although most blackjack players wouldn't make this bad play, they do make enough bad plays to give back approximately 0.8 percent of each wager before the 0.3 percent-0.7 percent reduction for basic strategy. In addition to Griffin's research into blackjack player error factors, James Grosjean discusses it in his first edition of *Beyond Counting* (2000), pages 9-10. I also conducted research on the subject, which appeared in *Casino Enterprise Management*—"How Poor are Poor Players?" (April 2009). This article will also appear in my next book, *Casino-ology 2*, to be released in January or February 2011. Give yourself 5 points if you said the play was bad, and an additional 5 points if you said it would cost the player 2 percent to 5 percent of the money wagered on that hand.

4. *What are the top five key ingredients that go into the final determination of a table game's continuing hold percentage range?* (10 points)

Probably one of the "sleeper" books to come out in 2010 was Eliot Jacobson's *Contemporary Casino Table Game Design* (2010). On pages 20-21, he discusses the factors that drive table game hold percentages. Give yourself 2 points for each one of the following ingredients you got correct: (1) mathematical house advantage, (2) player's "buy-in" amount, (3) percentage of buy-in amount that is the player's average bet, (4) length of time played on the table, and (5) speed of the game. You notice there is no mention of dealer "luck." Jacobson and I both agree on all these factors, which is scary since we arrived at these factors separately. By the way, the first chapter in the book, Introduction to Table Game Mathematics, is a must-read by anyone aspiring to be in table games management. This is the best information on gaming mathematics and statistics since Hannum's *Practical Casino Math*.

5. *There appears to be some reluctance with casino executives regarding the use of continual shuffling machines (CSMs) in blackjack. Some executives believe the machines greatly reduce the game's mathematical edge. Is this condition true, and if so, by how much is blackjack's house advantage reduced?* (10 points)

Good question, and it has been asked by a large number of table games executives over the past several years. Although a number of anecdote-based comments have condemned CSMs for significantly lowering hold percentages, these theories are totally baseless. Give yourself 10 points if your answer was "slightly" or "a little" of a decrease to the house advantage. CSMs reduce the mathematical edge by 0.03 percent, or 3 cents per every $100 wagered. This is due to the fact that the continually shuffled cards are never really rich in 10s or small cards, and the basic strategy is consistently the correct play. How does the casino overcome this 3-cent deficit? Volume of course! The continual dealing aspect of the CSMs allows the dealer to deliver more hands per hour, which more than makes up for the slight reduction in mathematical edge. Note: Beware of the slow down factor; dealers on the CSMs have a tendency to slow their game pace. Be sure game pace is monitored and the importance of optimal pace continually stressed. For a more in-depth analysis of the continual shuffling machine's effect, please check out my book, *Casino-ology* (2008), pages 251-254.

6. *There has always been some controversy over whether or not talented roulette dealers can influence the roulette ball's final pocket placement. Some dealers claim they can hit wheel sections, while others claim they can accurately hit a specific color. Is this theory "true," and what percentage of advantage would a dealer/player collusion scam actually earn if the dealer could drop the ball within 32 numbers?* (10 points)

If you have answered this question "maybe" or "sometimes," you're wrong; don't give yourself any points. This has been a discussion topic for as long as I've been in the gaming business. I've known a lot of roulette dealers who claim they can spin the ball and hit any color or group of numbers they wish. If this was true, wouldn't there be a number of wealthy, retired roulette dealers? If they could drop the ball into specific sections, wouldn't a large number of roulette croupiers have used their skill to at least pay the rent and earn additional drinking money? In 34 years of gaming, I have yet to find a dealer who could "talk the talk and walk the walk." By the way, if a dealer could drop the roulette ball in a group of 32 numbers or less on every spin (remember there are only 38

numbers on the layout), he and his accomplices could earn a 12.5 percent return on their wagers. I discuss this issue in my book, *Advantage Play for the Casino Executive* (2006), pages 103-104. I also have an entire chapter dedicated to roulette wheel bias that many of you may find interesting.

7. *In card counting, the indice for the hand 16 vs. 10 is equal to or greater than a true count of "0," which instructs the player to stand. This means that at an even or "zero" count, the player must stand on his 16. However, basic strategy tells us that the best play is to hit 16 vs. 10. Why is there a difference, and which strategy is correct?* (10 points)

The concept of count indices and how they are used is one of the toughest tools to acquire when learning how to count cards. The matrix is set up based on both positive and negative numbers, and for some, trying to determine what indices are great than or equal to a specific true count is close to impossible. The above example typifies the issue of confusion. Basic strategy tells use to stand on 16 vs. 10; however, the indices for Hi/Lo count system (and every other balanced count system) tells use to stand at "0" equal to or greater than. Where most people get confused is that they forget basic strategy is based on the knowledge of three cards: the dealer's up-card, and the player's cards in his hand. When we count the cards the player is holding that represent 16, we come up with a count of zero (+1 [six] + -1 [ten] = 0). When we add the dealer's 10 value card (-1), we now have a count of -1. Referring back to the indice matrix we notice the pivot point number is "zero." With a count of -1 the counter is instructed to hit. This is also the correct advice given by basic strategy. Grab yourself 10 points if you knew the answer that both basic strategy and deviation indices were correct. For more information on card counting indices, please refer to my book, *Card Counting for the Casino Executive* (1990), pages 59-60.

8. *Many casino executives have experienced undesirable, but temporary losses to higher wagering customers. What statistical tool can the savvy executive use to help him understand his casino's range of risk for different games at different betting levels?* (10 points)

The use of standard deviation and 95 percent confidence level analysis is the best tool for determining range of risk for any betting level. One of the best explanations of the use of confidence levels regarding casino risk is found in Robert Hannum and Anthony Cabot's book, *Practical Casino Math: 2nd Edition* (2005), pages 21-30. Several summers ago I had the privilege of presenting a seminar with Hannum in Colorado to the licenses when the state increased the betting limit from $5 to $100. Many of the licenses were considering raising their roulette limits to "$100 any way you can get to a number." Hannum did a masterful job relating the pitfalls of statistical fluctuation on a high volatility game, and convinced our audience that "$25 any way to a number" was about all the risk they would be able to stomach. Give yourself 10 points if you mentioned standard deviation or confidence levels/limits.

Bonus Question: *What is the actual cost of a "free bet" offer, and how many hands will the free bet customer have to play at that same bet value before the casino can expect to break even?* (20 points)

A number of casino marketing department are using "free bet" offers to entice customers to come back to the casino. These offers are given to players who are presently in the player database, wager a specific average minimum or higher, and are active local customers. The "free bet" is only free to the customer, and is profitable as long as it is used as a return incentive for local players with marginal visit frequency. In other words, the casino is trying to increase the play frequency on specific medium to higher limit players. So what is the cost of the promotion per "free" bet?

The previous example illustrates the cost of the free offer based on a promotional wager amount of $50. Remember, this is a totally free offer and no additional money is required. Based on this model, the blackjack customer wagering the $50 coupon—and subject to a 1.5 percent mathematical house advantage—is costing the casino $24.63. Now that marketing has motivated him to enter the casino, and enticed him to play blackjack, how long will it take before the casino covers their cost and the promotion starts to produce a positive return? That, of course, depends on how much of his money the customer wagers after the free bet. If he wagers an average of $50 per hand, he will need to make approximately 33 more wagers before the promotion breaks even. In essence, the player needs to put $1,642 in action before the cost of the single "free" bet is covered. Give yourself 10 points if you knew the cost was approximately half the wager, and collect the remaining 10 points if you stated that the customer would have to play for 30 minutes or more to cover the cost of the "free" coupon.

The purpose of this exercise is twofold. First, you can use it to gauge your knowledge of current gaming issues. Second, you can use the answers of this quiz to help you research or dig down deeper into the before-mentioned issues. The books I used as sources for much of this material would be a great addition to your own personal gaming library. I haven't really thought about ranking the value of your final score. If you got all 100 points, you're a very studious individual. If you earned 50 points, you're still doing great. Each of these quiz questions were really tough, and the answers unknown by most people in the gaming business. If you scored a big fat zero, that's OK, too. At least you were interested enough to take the challenge, and now that you're armed with the resources necessary to expand your gaming knowledge, you can still feel good about the outcome. Remember, knowledge is power, and it is especially true in the numbers-oriented gaming industry.

Blackjack Free Bet—Single Decision	
Fee Bet Value	$50
House Advantage (percent)	1.5 percent
Result: House	$ -
Result: Player	$ (24.63)
Cost	$ (24.63)

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