

Name(s) _____

ECON 360, Socioeconomics of Gambling
Fall 2026

Homework 2 - Helpful for studying for Exam 1

You get full credit; not turned in or graded.

Instructions: Provide answers in the spaces provided, using your normal handwriting. Most questions can be answered using your lecture notes or material from *Casino Math*.

For questions 1-4, write down the appropriate formula, then use it for the scenario in part (a).

1. the probability of event x happening, in a case in which there are y possible outcomes. x/y

a. Use the formula to calculate the probability of rolling a 4 on a regular die. $1/6$

2. the odds against event x happening, when y is the number of possible outcomes. $(y-x) \text{ to } x$

a. Use the formula to calculate the odds against rolling a 4 on a regular die. $5 \text{ to } 1$

3. the HA formula, when the payoff is x to 1, and the true odds against are y to 1. $\frac{y-x}{y+1}$

a. Use the formula to calculate the HA on spinning the 0 in a game of European roulette. $\frac{36-35}{37} = \frac{1}{37} = 2.7\%$

4. the HA formula for craps, if the payoff is x to z , and the true odds are y to w . $\frac{yz-xw}{z(y+w)}$

a. Use the formula to calculate the HA on a \$5 place bet on the number 10. $\frac{10(5)-9(5)}{5(10+5)} = \frac{5}{75} = 6.67\%$

Questions 5-12 are about craps. Consider a \$5 place bet on the 9. This means rolling an 9 wins the bet, rolling a 7 loses the bet, and other rolls are irrelevant. (Hint: Use the *Casino Math* book and your lecture notes to help with these.)

5. How many ways are there to lose the bet (rolling 7)? List them. 6

$(1,6)(6,1)(2,5)(5,2)(3,4)(4,3)$

6. How many ways are there to win the bet (rolling an 9)? List them. 4

$(3,6)(6,3)(4,5)(5,4)$

7. What is the probability of winning this bet? (a) 4/10 (b) 4/26 (c) 9/16 (d) 6 to 36

8. What are the odds against winning this bet? (a) 7:5 (b) 36:6 (c) 6:4 (d) 9:7

9. If the casino paid the true odds on this bet, how much would you win for your \$5 winning bet on the 9?

(a) \$6 (b) \$6.50 (c) \$7 (d) \$7.50 (e) \$10

10. What is the HA on the place bet on the 9? Using 4a, $x=7, z=5, y=3, w=2, \frac{3(5)-7(2)}{5(3+2)} = \frac{1}{25} = 4\%$

11. For what other place bet would you give all the same answers as questions 5-10? In other words, a place bet on the 9 is the same as which of these:

(a) \$5 place bet on 4 (b) \$5 place bet on 5 (c) \$6 place bet on 6 or 8 (d) \$5 place bet on 10

(except Q6 different rolls)

* I used \$5 bet to get $w \geq z$, but you could use $y=2, w=1$

12. Suppose you make a \$10 pass-line bet. What happens on the come-out roll if you roll...

11 +10 12 -10 2 -10 6 X 7 +10 5 X

Indicate a win with (+ and the \$ amt.) and lose with (- and the \$ amt.). If you neither win nor lose, write "X".

Questions 13-18 are miscellaneous questions about casino volume measurement and statistics.

13. How would gross gaming revenue (GGR) be calculated for a slot machine?

Total money put into machine (bet) minus prizes paid out.

14. How would handle be calculated for a slot machine?

Total amount put into machine (bet)

15. What is drop at a craps table?

Amt of cash in the box (under table), from customers buying chips.

16. What does it mean that roulette wheel spins are independent events?

The next roll doesn't depend on the previous one.

17. Name two card games at casinos that are based on dependent events.

blackjack, poker, baccarat

18. Keeping in mind the EV on Megamillions lottery tickets and the EV for various casino games, list a few reasons why you think people might play the Megamillions instead of going to a casino.

- Only way to legally get life-changing money.
- Easier to play.