

Math 107 Quiz #8 Answers

- (a) The probability of rolling doubles (winning \$22) is $\frac{6}{36}$ or $\frac{1}{6}$.
So, the probability of not rolling doubles (losing \$5) is $\frac{30}{36}$ or $\frac{5}{6}$.
Expected Value = $22(\frac{1}{6}) - 5(\frac{5}{6}) = \boxed{-0.5}$

(b) Since the expected value to you is -0.5 , the expected value to your friend is $\boxed{0.5}$.

(c) You would expect to $\boxed{\text{lose}}$ because your expected value is negative. You would expect to lose around $200(0.5) = \boxed{\$100}$.
- Despite what has already happened with the coin flips, the next coin flip has a probability of $\boxed{\frac{1}{2}}$ of being heads.
- Suppose an insurance company issues a policy and knows the following about its policyholders:
1 in 200 will make a claim for \$50,000 and 1 in 100 will make a claim for \$20,000

(a) Expected Value to the company = $400 - 50,000(\frac{1}{200}) - 20,000(\frac{1}{100})$
 $= 400 - 250 - 200 = \boxed{-50}$

(b) Since $-50,000(\frac{1}{200}) - 20,000(\frac{1}{100}) = -450$, in order to have an expected value of \$100 for each policy, the company would have to charge $\boxed{\$550}$ for each policy.
- $\boxed{\text{No}}$, a house edge of \$0.12 does not mean that everyone that plays will lose \$0.12.
 $\boxed{\text{It means that if many people play, the casino can expect to gain about \$0.12 per person on average.}}$