

Some sample questions for exam 3 Math 10, Spring 2004

These are all of the questions from last semester's exam 3 that are related to material we have covered this semester. The actual exam was longer, as several questions have been omitted because they deal with material we did not cover. Conversely, since we have covered section 4.5, you should expect that material to appear on our exam. Also, this semester, we covered Chapter 7 in more depth, so you should expect questions that are slightly harder than these.

Fundamentally, however, keep in mind that the last word as to what will appear on our exam is the homework and quizzes. Therefore, your study plan for this exam should be based on the homework and quizzes.

1. There are 52 cards in a standard deck, and there are 4 cards of each rank (i.e., 4 jacks, 4 queens, 4 10's, etc.) If you choose a card randomly from a standard deck, what is the probability that you will pick either a 2 or 3? Show all your work.

2. Kevin is an avid golfer. Each time he tries to make a putt, he has a $\frac{4}{5}$ chance of succeeding. If he tries to make three putts in a row:

(a) What is the probability that he will succeed at making all three putts?

(b) What is the probability that he will miss at least one putt?

3. Suppose I make you the following bet: I'm going to roll a (fair) 6-sided die. If I roll a 3 or less, I pay you \$2; if I roll a 4 or 5, I pay you \$1; and if I roll a 6, you pay me \$6. Would you take this bet? Justify your answer by computing the expected value of the bet for you.

4. Sid the Spy is monitoring scrambled enemy communications, which are basically page after page of random numbers and letters, like:

```
lkxdlkugwesdfo8hslfnstdkfds8sefnlf87wtfwo9832846bndvnb7g8yrkashdfskufh8
o1328yrifubkfjnasdklfjh2i73rtusfkwuef28hrwkfuesfkjs2039uisflkekujfhe
kljhfi87yf2iuhwfjnsf82hrjfflfwjrhw8h3sf198y382rnsdf0sdhf03874gt232nsid
ihwqef872g3rekfhk8rkuhekjh23jrkwllsdfi8d81uihsfihwis8y2oihlisehflsil
```

Suddenly, after reading several thousand pages of this, he notices the word "sid" (end of line 3 above). Should he be surprised? Briefly **explain** your answer.

5. Clive the carnival barker is offering the following game: "Step right up and pay \$1 for the opportunity to win \$30! You pay me \$1 and I'll flip 5 different coins. If all 5 coins land heads, I'll pay you \$30!" Assume that Clive is relatively honest (for a carnival barker) and will use 5 fair coins. Is Clive's game worth playing? Briefly **explain** your answer in terms of the expected value of the game.