

MA 110-91 §3.2 - 5.4, 7.0 - 7.2	<b>Test #2</b>	score	Name: _____ 18 November 2000
------------------------------------	----------------	-------	---------------------------------

1. If a pair of fair coins is flipped, what is the probability of getting exactly one heads?  
(11 points)

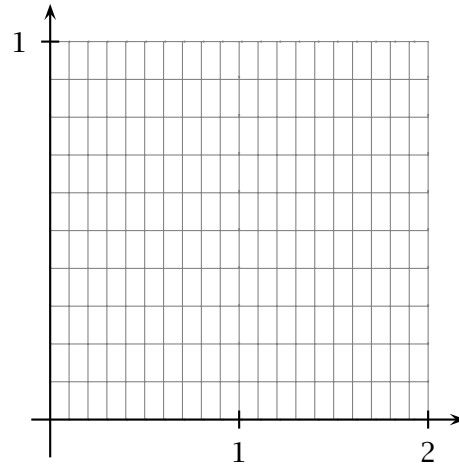
---

2. Calculate the probability of being dealt a flush (all cards having the same suit) in a standard 52-card deck. (11 points)

---

3. We play a dice game by rolling a pair of dice. If the sum of the dice is evenly divisible by 5, I pay you \$10; otherwise, you pay me \$2. What are your expected winnings per game?  
(11 points)

4. Draw a relative frequency diagram for the dataset  $\{0.1, 0.5, 1.2, 1.5, 0.9, 1.3, 1.7, 0.4, 0.7, 1.3, 1.7\}$ . Use 4 data groups each of width 0.5 starting at 0. (11 points)



5. Find the mean and standard deviation of the sample  $\{1, 4, 5, 4, 3, 6\}$  (11 points)

6. A population is normally distributed with mean 36.8 and standard deviation 5.5. Find the probability  $p(x < 40.0)$ . (11 points)

7. Determine the margin of error for a 95% confidence level in a survey of 500 randomly chosen people. (11 points)

- 
8. Suppose that 10% of math majors switch to statistics each year and that 20% of stat majors switch to math each year. Form the transition matrix for this Markov chain. If 50% of the students in the Department of Mathematics and Statistics are math majors and 50% are stat majors, what will the percentages of majors be in each subject in two years? (12 points)

- 
9. Rewrite the system in matrix form. Then use row operations to put the first column in 1-0-0 form (you don't need to go any further). (11 points)

$$\begin{aligned}x + y + 2z &= 1 \\2x - y + z &= 2 \\-2x + 3y - z &= 0\end{aligned}$$