

MA 110-07
§3.1 – 4.3

Test #2

score

Name: _____

17 April 2001

1. Three coins are tossed. Write out the sample space S of all outcomes. Find the probability that 2 coins are heads and one is tails. Next, find the probability that exactly two of the three coins match. (*11 points*)

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2. Find the probability of being dealt four-of-a-kind in a five-card hand. (*11 points*)

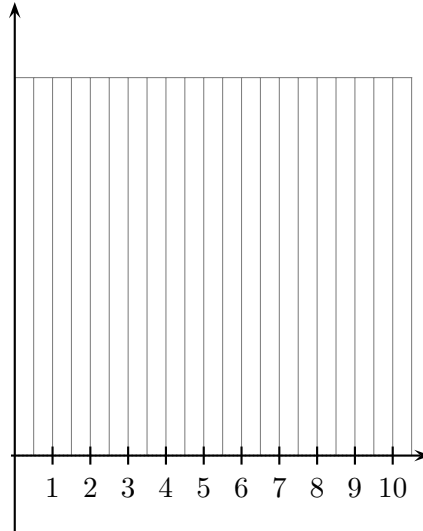
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3. If two dice are rolled, find the probability that at least one is a 6. Then do the same problem, but with three dice, i.e., find the probability that at least one of the three dice is a 6. (HINT: consider the complementary event.) (*11 points*)

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4. Let's play a dice game where you roll two dice. If the sum is 5 or less, I pay you \$7. If the sum is 6, 7, 8, or 9, you pay me \$5. If the sum is 10 or greater, I will again pay you \$7. Compute the expected value of this game (from your perspective). Would this be a profitable game for you to play repeatedly? *(11 points)*

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5. A coin is flipped; then another coin is flipped. Let A denote the event that the first coin lands heads. Let B denote the event that exactly one coin lands heads. Are A and B mutually exclusive? Are A and B independent? Explain. *(11 points)*

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6. Three coins are tossed. Find the probability that all three coins are heads given that at least two of the three coins are heads. *(11 points)*

7. Draw a *relative frequency histogram* for the dataset $\{1.1, 1.5, 2.3, 5.0, 9.1, 3.2, 7.4, 3.9, 7.1, 3.2, 7.2, 8.6, 2.2, 3.7, 5.9, 5.1, 8.1, 9.9\}$. Use 5 data groups each of width 2 starting at 0 (so that $0 \leq x < 2$ describes the first category). (11 points)



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8. Calculate the mean, median, and mode of the data set $S = \{3, 2, 5, 3, 7, 4, 1, 4, 2, 5, 3, 6\}$ (11 points)

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9. Calculate the sample variance and sample standard deviation for the data set $S = \{22, 26, 21, 23\}$. (11 points)