

Math 130

Third Test

_____ (6 points)

This exciting fifty minute, four page test covers chapter three of *Mathematics: A Practical Odyssey* by Johnson and Mowry. Show your work and clearly indicate your answers. All parts of problems are four points unless otherwise indicated.

1. A couple has two children. Find the probability of the following (3 points each)
 - a) Having two girls
 - b) Having two boys
 - c) Which is more likely, two children of the same sex or children of different sexes?

2. A jar contains twenty-six jelly beans: six red, eleven yellow and nine black. If we choose one jelly bean, what is the probability that it is (2 points each)
 - a) red
 - b) green
 - c) red or yellow
 - d) not black

Now find the odds of each of the following

- e) red
- f) yellow or red
- c) yellow
- d) not black

3. If $o(E) = 23:56$, find $o(E')$.

4. If $p(E) = 13/513$, find $o(E)$.

5. In order to evaluate their teachers a college surveyed 200 students regarding whether or not they took college algebra and whether or not they were happy with their teachers. Of those who took college algebra 40 were happy with their teachers and 30 were not. Of those who did not take college algebra 50 were happy with their teachers and 80 were not. Find the following probabilities.

(3 points each)

a) A student took college algebra

b) A student was pleased with their teachers

c) A student who took college algebra was happy with their teachers

d) A student who was happy with their teachers took college algebra

6. Two cards are dealt from a full deck of 52 cards. Find the probabilities of the given events.

a) The first card is not a face card (A,2,3,..., or 10; any suit)

b) The second card is a not a face card.

c) Both the first and the second are not face cards.

d) Draw a tree diagram illustrating this.

7. A pair of regular six-sided dice are rolled. Find the probability of the following.

a) Rolling an eleven..

b) Rolling a number more than eleven.

c) Rolling a number less than eleven.

8. Suppose Tennessee had a “fab four” 4/26 lottery where the tickets cost \$1 and first place (four of four) paid \$1,000 and second (three of four) paid \$10. (3 points each)

a) Find the probability of winning first place.

b) Find the probability of winning second place.

c) Find the probability of not winning.

d) Find the expected value of the fab four.

9. Are the following independent (I), dependent (D) and or mutually exclusive (E)? (3 points each)

I D E “I have exactly two feet” and “I have at least three feet”

I D E “I got an A in Math 130” and “I got an A on this exciting 50 minute test.”

I D E “I voted for Reagan” and “I voted for Bush”