Math 106 Quiz 5 Summer 2017 OL1
Professor: Dr. Katiraie   Name_____

Instructions:

- The Quiz is worth 100 points. There are 10 problems, each worth 10 points. Your score will be posted in your Portfolio with comments.
- This quiz is **open book** and **open notes**, and you may take as long as you like on it provided that you submit the quiz no later than the due date posted in our course schedule of the syllabus. You may refer to your textbook, notes, and online classroom materials, **but you may not consult anyone**.
- You should show all of your work to receive full credit. If you do not show work, you may earn only partial or no credit.
- Please type your work in your copy of the quiz, or if you prefer, create a document containing your work. Scanned work is also acceptable. Be sure to include your name in the document. Review instructions for submitting your midterm exam in the Quizzes and Exams Conference.
- If you have any questions, please contact me by e-mail (farajollah.katiraie@faculty.umuc.edu).

At the end of your quiz, you must include the following dated statement with your name typed in lieu of a signature. Without this signed statement you will receive a zero.

I have completed this quiz myself, working independently and not consulting anyone except the instructor. I have neither given nor received help on this quiz.

    Name: Date:

Please remember to show ALL of your work on every problem. If there is no work to show, then include a sentence or two explaining your answer.

Here are the basic rules of showing work:

a) Each step should show the complete expression or equation rather than a piece of it.
b) Each new step should follow logically from the previous step, following rules of algebra.
c) Each new step should be beneath the previous step.
d) The equal sign, =, should only connect equal numbers or expressions.

Our textbook is full of good models of work shown correctly. If you have questions about showing work, please ask.

Please Show or Explain Your Work on Each Problem.

PROBABILITY (<u>Applied Finite Mathematics</u>, "Probability")

1. A card is selected from a deck. Find the following probabilities.

    a. P (a spade card)

    b. P (a face card)

    c. P (a king and a spade)

2. A jar contains 7 red, 6 white, and 8 blue marbles. If a marble is chosen at random, find the following probabilities.

    a. P (red)
    b. P (white)
    c. P (red or blue)
    d. P (red and blue)

3. Consider a family of three children. Find the following probabilities.

    a. P (two girls and a boy)
    b. P (at least one girl)
    c. P (children of both sexes)
    d. P (at most one boy)

Use the addition rule to find the following probabilities.
4.   A card is drawn from a 52-card deck, and the events C and D are as follows:
    $C = \{$It is a queen$\}$ $D = \{$It is a spade$\}$.
    Find "the probability of event C OR event D occurring", $P(C$ U $D)$.

5. A single fair 6-sided die is rolled, and the events E and F are as follows:
    $E = \{$An even number shows$\}$ $F = \{$A number greater than 4 shows$\}$.

    Find "the probability of event E OR event F occurring", $P(E$ U $F)$.

6. At De Anza College, 40% of the students take Finite Mathematics, 50% take Statistics and 10% take both. What percentage of the students take Finite Mathematics or Statistics?

7. This quarter, there is a 60% chance that Jason will pass Accounting, a 70% chance that he
    will pass English, and 90% chance that he will pass at least one of these two courses. What is
    the probability that he will pass both Accounting and English?

CONDITIONAL PROBABILITY
Do the following problems using the conditional probability formula:
$$P(A|B) = \frac{P(A \cap B)}{P(B)} \qquad P(B|A) = \frac{P(A \cap B)}{P(A)}$$

8. A single card is drawn from a 52-card deck. Find the conditional probability of
    P(a king | a heart).

9. If $P(A) = 0.4$ and $P(B)=0.7$, and $P(A$ and $B)=0.3$, find the following.

$P(A|B)$

10. If $P(A)=0.4$ and $P(B)=0.7$, and $P(A$ and $B)=0.3$, find the following.

$P(B|A)$

*End of Quiz 5: please do not forget to write and sign (or type) the required
statement explained in the box above Part I of the Quiz 5.*