Name: _____   Date: _____
Math 422- Mrs. Bagala   Quarter 1 Review 3

Show all work to receive full credit.

1. Given the conditional statement, "If there are not 12 months in a year, then there are 8 days in a week." Write the converse and a biconditional. Then determine the truth value of each.

Converse:_____

_____

Biconditional:_____

_____

2. Express each as a single fraction in simplest form:

$\dfrac{x+2}{x-7} - \dfrac{x^2+4x+13}{x^2-4x-21}$	$\dfrac{x^2-6x+9}{12-4x} \cdot \dfrac{x^6-9x^4}{x^3-3x^2}$
$\dfrac{y+1}{9-y^2} + \dfrac{y}{y-3}$	$\dfrac{x+7}{x^2+13x+42} - \dfrac{10x}{x^2+8x+7}$

3. Norah is going to the beach. She can choose from 5 different beach towels, 4 different pairs of flip flops, and 2 pairs of sunglasses. How many different choices of one towel, one pair of flip flops, and one pair of sunglasses can she make?

4. A box of golf balls contains three yellow, four white, and one red. If Leroy chooses two golf balls from the box without replacement, find:

(a) P(yellow then red)

(b) P(2 red)

(c) P(white and red)

5. Solve: $\dfrac{10}{x^2 - 2x} + \dfrac{4}{x} = \dfrac{5}{x-2}$

6. Complete the truth table:

p	q	~p	~q					~ (p →~ q) ↔ ~ (~ p ∧ q)

Is the statement ~ (p →~ q) ↔ ~ (~ p ∧ q) a tautology? Explain your reasoning.

7. The probability that it rains today is ⅔. What is the complement of this event **and** what is the probability of the complement?

8. Three statements are written below. The truth values are given for the first two statements. Determine whether the third statement is true, false, or uncertain truth value.

Today is Saturday or I will have to set an alarm.	(True)
Today is Saturday.	(True)
I will have to set an alarm.	_____

She will read the book if and only if she likes it.	(True)
She will read the book.	(False)
She likes the book.	_____

If the Jets beat the Dolphins, then I will be happy.	(True)
I am not happy.	(False)
The Jets beat the Dolphins.	_____

9. Cali surveyed the students in the cafeteria about the number of times they bring their lunch to school per month. The table shows her findings.

Number of Times per Month	Males	Females
0– 5	35	25
6–10	23	16
11–15	22	13
16–20	18	8

(a) If a student is chosen at random, what is the probability that the student is male?

(b) If a student is chosen at random, what is the probability that they brought their lunch to school more than 10 times a month?

(c) If a female is chosen at random, what is the probability that she has brought her lunch to school between 6 and 15 times this month?

10. Write a statement that is logically equivalent to the statement "If I want to get an A, then I need to study every night."

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