Name: **Math 110** **Practice Test #2**

Directions: For each problem state the Population and Parameters and then conduct the appropriate hypothesis test using a 5% level of significance for each test.

1) A professor tells the class on the first day that the distribution for grades in all his classes over the past 20 years, has been as shown:
21% A's, 32% B's, 25% C's, 14% D's, and 8% F's
At the end of the semester the class of 40 students feels the professor was lying to them when he originally told them his normal break down of grades since out of the 40 students there were 7 A's, 10 B's, 14 C's, 4 D's and 5 F's. Does this data support the class's claim that the professor was probably lying to them at the beginning of the semester? (Assume students were randomly selected)

2) If you get a p-value of 0.034 which of these statements are correct?
(A) We would reject Ho at the 5% level but fail to reject at the 10% level
(B) We would reject Ho at the 5% level and accept Ho at the 1% level
(C) We would fail to reject Ho at the 1% level but reject Ho at the 5% level
(D) We would fail to reject Ho at the 5% level but reject Ho at the 1% level
(E) We would reject Ho at both the 1% and 5% level

3. What is the probability of rolling a six-sided die and getting a 4, and then getting a blue marble from a bag that contains 10 red, 7 green, 8 blue and 5 orange marbles?

4. Given you have a bag that contains 100 number tiles numbered 1 – 100:

a. What would be the probability of selecting one number tile that is either even or <u>*greater than*</u> 75 on one pull? (Show the probability formula you could use to solve this problem)

b. Are these two events disjoint? (Explain: Why or Why Not)

5. If you have a drawer with 16 socks in it (10 blue and 6 red), then what would be the probability of selecting two socks at random and getting a matching pair?

6. At a school there are 180 students in the Senior Class and:
24 Students play Baseball, Basketball and Football
35 Students play Baseball and Football
40 Students play Baseball and Basketball
45 Students play Basketball and Football
60 Students play Baseball
65 Students play Football
67 Students play Basketball

- Draw a Venn diagram to represent this scenario, make sure to include students that <u>do not play</u> any sports.

- What is the probability that you randomly select one student and they do not play any of these sports?

- What is the probability of selecting one student at random that plays just Football?

- What is the probability that if you select two students, they both play <u>*exactly*</u> two sports?

MULTIPLE CHOICE (CIRCLE THE BEST ANSWER FOR EACH QUESTION)

6. You draw two marbles at random from a jar that has 20 red marbles and 30 black marbles without replacement. What is the probability that both marbles are red?

A. 0.1551
B. 0.1600
C. 0.2222
D. 0.4444
E. 0.8000

Scenario

7. Insurance company records indicate that 12% of all teenage drivers have been ticketed for speeding and 9% for going through a red light. If 4% have been ticketed for both, what is the probability that a randomly selected teenage driver has been ticketed for speeding but not for running a red light?

A. 3%
B. 8%
C. 12%
D. 13%
E. 17%

8. Using the table shown for Hours worked and # of products sold, answer the following three questions.

a) What is the equation for the linear regression line to predict products sold based on the number of hours worked?

Hours	**# Sold**
1	8
4	24
5	31
8	50
10	67

b) What type of correlation does the data show?

c) Using your prediction equation, how many products sold would you predict for someone who worked 7 hours?

d) Calculate the residuals for each “point” (Hours, # Sold)

Formulas

General Multiplication Rule:

$$P\ (A \text{ and } B) = P(A)\ P(B|A)$$

General Addition Rule:

$$P\ (A \text{ or } B) = P(A) + P(B) - P(A \text{ and } B)$$