STAT 110 – Exam 3 – Seventeen Extra Practice Questions

1) If a fair die is rolled five times and the outcomes are 44444, then the probability that 4 appears on the next roll is:
A) 0 = 0%
B) 1/6 = 16.67%
C) 1/2 = 50.0%
D) 5/6 = 83.33%
E) 1 = 100%

2) The "Departed" was given 3 to 2 odds against winning the best picture Academy Award. This means the estimated probability of it winning was:
A) 1/3 = 33.3%
B) 2/5 = 40%
C) 1/2 = 50%
D) 3/5 = 60%
E) 2/3 = 66.7%

3) The probability distribution of for the color of M&M's in a standard bag is:

Color:	Brown	Red	Yellow	Green	Orange	Blue
Probability:	0.13	0.13	0.14	0.16	0.20	?

To make this a valid distribution, the probability of a blue M&M must be:
A) 0.04
B) 0.12
C) 0.14
D) 0.24
E) 1.00

Questions 4-6 are based on the following questions: 70% of students in a class are from in-state and 60% of students in a class are female. 45% of the student in a class are females from in-state.

4) What percent of students are from out-of state?
A) 25%
B) 30%
C) 35%
D) 42%
E) 85%

5) What percent of students are in-state but not female?
A) 25%
B) 30%
C) 35%
D) 42%
E) 85%

6) What percent of students are either in-state or female?
A) 25%
B) 30%
C) 35%
D) 42%
E) 85%

Questions 7-9 are based on the following set-up. The probability that the first dart thrown hits bullseye is 20%. If the first is a hit, the probability the second is a hit is 50%. If the first is a miss, the probability the second is a hit is 25%.

7) What is the probability that both darts hit the bullseye?
A) 1%
B) 10%
C) 15%
D) 40%
E) 70%

8) What is the probability that at least one dart hits the bullseye?
A) 1%
B) 10%
C) 15%
D) 40%
E) 70%

9) Getting a bullseye on the first toss and getting a bullseye on the second toss:
A) Are independent
B) Cannot both happen
C) Both of the above
D) Neither of the above
E) Can't tell from what is given

10) Consider a game where there is a 1% chance of winning $100, a 50% chance of winning $1, and a 49% chance of winning nothing. What amount do you expect to win with a ticket?

A) $0.50
B) $1.00
C) $1.50
D) $101
E) $150

11) A psychological exam's scores are approximately normally distributed with mean 20 and standard deviation 2. About what percent of the population should have scores between 20 and 24?

A) 2.5%
B) 16%
C) 32%
D) 47.5%
E) 95%

Questions 12-16 are based on the following set-up. A candidate needs more than 30% of the vote to force a run-off election. A random sample of 400 likely voters is selected to see if there is significant evidence that they can force a run-off. Of the sample, 123 favor the candidate.

12) The observed proportion favoring the candidate is:

A) $\sqrt{\frac{0.3(1-0.3)}{400}} \approx 0.023 = 2.3\%$

B) $\sqrt{\frac{0.3075(1-0.3075)}{400}} \approx 0.023 = 2.3\%$

C) 0.3 = 30%

D) 123/400 = 0.3075 = 30.75%

E) (400-123)/400 = 0.6925 = 69.25%

13) If the true percentage supporting the candidate is 30%, then the standard deviation of $\hat{p}$ is:

A) $\sqrt{\frac{0.3(1-0.3)}{400}} \approx 0.023 = 2.3\%$

B) $\sqrt{\frac{0.3075(1-0.3075)}{400}} \approx 0.023 = 2.3\%$

C) 0.3 = 30%

D) 123/400 = 0.3075 = 30.75%

E) (400-123)/400 = 0.6925 = 69.25%

14) What null hypothesis should the candidate be testing?

A) $\hat{p}$ <0.3
B) p=0.3
C) $\hat{p}$ =0.3075
D) p=0.3075
E) p > 0.3

15) What alternate hypothesis should the candidate be testing?

A) $\hat{p}$ <0.3
B) p=0.3
C) $\hat{p}$ =0.3075
D) p=0.3075
E) p > 0.3

16) This hypothesis test results in a p-value of 0.3925. If α=0.05, the candidate should:

A) Conclude there is not enough evidence to reject the alternate hypothesis
B) Conclude there is not enough evidence to reject the null hypotheses
C) Reject the alternate hypothesis
D) Reject the null hypothesis

17) If H_0 is the mean=5 and H_A is the mean < 5, then rejecting H_0 means that:

A) We conclude the mean is 5
B) We conclude the mean is less than 5
C) We don't have enough evidence to conclude the mean is 5
D) We don't have enough evidence to conclude that the mean is less than 5