College Prep Stats
Review for Test Chapter 5

Part I: Determine whether the following is a probability distribution. Answer Y for "Yes", N for "No". Use the following A) ~ D) for your reason(s). <u>The reason(s) could be used more than once and each question could have more than one reason.</u>

A) The probabilities add up equal to 1 or close enough to 1.
B) The probabilities add to less than one or greater than one or not close enough to one.
C) Each individual probability is not a number between 0 and 1 inclusive.
D) There is not enough information to determine whether it is a probability distribution.

1.)

x	P(x)
1	0.200
2	0.037
3	0.184
4	0.446
5	0.133

1. _____

Reason: _____

2.)

x	P(x)
1	0.204
2	0.301
3	0.507
4	-0.033
5	0.021

2. _____

Reason: _____

3.)

x	P(x)
1	0.290
2	0.218
3	0.047
4	0.033
5	0.416

3. _____

Reason: _____

Part II: <u>Determine</u> whether the given problem fits the requirements of a Binomial probability distribution (B), a Poisson probability distribution (P), or neither (N).

4.) Rolling a single die 57 times and keeping track of the numbers that are rolled. **4.** _____

5.) Rolling a single die 47 times and keeping track of the "fives" rolled. **5.** _____

6.) The average number of cars sold by the Westphil car dealer is 3 cars per day. What is the probability that exactly 4 cars will be sold tomorrow? **6.** _____

Part III: Determine whether the events are discrete (D) or continuous (C).

7.) The temperature of a randomly selected day. **7.** _____

8.) The number of softball bats Mr. Smith owns. **8.** _____

9.) The cost of a randomly selected cell phone. **9.** _____

Part IV: Short Answer. <u>This includes probability statements and calculator commands.</u>

10.) You pay $15 to enter a raffle in which you have a 0.03 chance of winning $2,000. If you play this game once every day, find the expected value and the probability of winning exactly once in 365 days.

10. E=_____

$P(1)$ =_____

11.) Focus groups of 13 people are randomly selected to discuss products of the Yummy Company. It is determined that the mean number (per group) who recognize the Yummy brand name is 8.4, and the standard deviation is 0.97. Would it be unusual to randomly selected 13 people and find that fewer than 5 recognize the Yummy brand name?

11.Low_____

Upper_____

Usual____Unusual___

12.) The number of golf balls ordered by customers of a pro shop has the following distribution. Find the mean and standard deviation for this distribution.

x	P(x)
0	0.0296
1	0.3456
2	0.4254
3	0.1386
4	0.0608

12. μ =_____

σ = _____

13.) The probability that a box of 4 desk phone will contain 0, 1, 2, 3, 4 defective ones are 0.5896, 0.2665, 0.0964, 0.0388, and 0.0087, respectively. Find the μ and σ of this distribution.

13. μ =_____

σ = _____

x	P(x)
0	0.5896
1	0.2665
2	0.0964
3	0.0388
4	0.0087

14.) In a game, you pay $6 to play and win $110. If you have a 1/25 probability of winning and a 24/25 probability of losing, what is the expected value of your profit?

14. _____

15.) Suppose that 12% of people are left handed. If 20 people are selected at random, what is the probability that exactly 2 of them are left handed?

15. _____

16.) What is the probability of having at least three baby boys in 6 total births? Assume that male and female births are equally likely and that the births are independent events.

16. _____

17.) According to a college survey, 27% of all students work full time. Find the average and standard deviation for the number of students who work full time in a sample size of 25 students.

17. μ =_____

σ =_____

Part V: Multiple Choice

18.) Does the given procedure result in a binomial distribution? Rolling a single die 57 times, keeping track of the numbers that are rolled.

18. _____

a) Not binomial: there are more than two outcomes for each trial.
b) Not binomial: the trials are not independent.
c) Not binomial: there are too many trials.
d) Procedure results in a binomial distribution.

19.) Find the minimum usual value and the maximum usual value when $n = 1056$ and $p = 0.80$

19. _____

a) Minimum: 826.42; maximum: 863.18
b) Minimum: 831.8; maximum: 857.8
c) Minimum: 818.8; maximum: 870.8
d) Minimum: 870.8; maximum: 818.8

20.) Sampling without replacement involves dependent events, so this would not be considered a binomial experiment. Explain the circumstances under which sampling without replacement could be considered independent and, thus, binomial.

20. _____

a) $n > 0.05N$
b) $n \leq 0.05N$
c) $n \geq 0.05N$
d) $n = 0.05N$

21.) Does the given procedure result in a binomial distribution? Rolling a single die 47 times, keeping track of the "fives" rolled. **21. _____**

a) Not binomial: the trials are not independent.
b) Not binomial: there are too many trials.
c) Not binomial: there are more than two outcomes for each trial.
d) Procedure results in a binomial distribution.