1. ***Assume that 12 jurors are selected from a population in which 50% of the people are Mexican-Americans. The random variable X is the number of Mexican-Americans on the jury.***

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| X | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| P(x) | 0.000 | 0.003 | 0.016 | 0.054 | 0.121 | 0.193 | 0.226 | 0.193 | 0.121 | 0.054 | 0.016 | 0.003 | 0.000 |

1. Find the probability of exactly 4 Mexican-Americans among 12 jurors.

P (4) = \_\_\_\_\_\_\_

1. Find the probability of 4 or fewer Mexican-Americans among 12 jurors.

The probability of 4 or fewer Mexican Americans among 12 jurors is\_\_\_\_\_\_\_\_

1. Which probability is relevant for determining whether 4 jurors among 12 is unusually low; the result from part (a) or part (b)?
2. The result from part (b), because it measures the probability of 4 or fewer successes.
3. The result from part (a), because it measures the probability of exactly 4 successes.

D. Does 4 Mexican-Americans among 12 jurors suggest that the selection process discriminates against Mexican-Americans? Why or Why not?

 A. Yes, because there is less than or equal to a 0.05 probability of it occurring.

 B. Yes, because there is greater than a 0.05 probability of it occurring.

 C. No because there is a greater than a 0.05 probability of it occurring.

 D. No, because there is less than or equal to a 0.05 probability of it occurring.

1. ***Assume that a procedure yields a binomial distribution with a trial repeated N times. Use a binomial probabilities table to find the probability of X successes given the probability P of success on a given trial.***

N= 5, X = 5, P = 0.40

P (5) =

(Round to three decimal places as needed)

1. ***A government agency has specialist who analyze the frequencies of letters of the alphabet in an attempt to decipher intercepted messages. In Standard English text, a particular letter is used at a rate of 5.29.***
2. Find the mean and standard deviation of the number of times this letter will be found on a typical page of 1500 characters.

U=\_\_\_\_\_

O =\_\_\_\_\_\_ (Round to one decimal place as needed)

1. In an intercepted message, a page of 1500 characters is found to have the letter occurring 93 times. Is this unusual?
2. No, because 93 is within the range of usual values.
3. Yes, because 93 is greater than the maximum usual value.
4. Yes, because 93 is within the range of usual values.
5. Yes, because 93 is below the minimum usual value.
6. ***A pharmaceutical company receives large shipments of aspirin tablets. The acceptance sampling plan is to randomly select and test 12 tablets, and then accept the whole batch if there is only one or none that doesn’t meet the required specifications. If a particular shipment of thousands of aspirin tablets actually has a 4% rate of defects, what is the probability that this whole shi8pment will be accepted?***

The probability that this whole shipment will be accepted is \_\_\_\_\_\_\_

(Round to three decimal places as needed)

**5. There is a 0.958 probability that a best of seven contest will last four games, a 0.2001 probability that it will last five games a 0.2164 probability that it will last six games, and a 0.4877 probability that it will last seven games. Verify that this is a probability distribution. Find its mean and standard deviation. Is it unusual for a team to “sweep” by winning in four games?**

 What is the mean of the probability distribution?

 U=\_\_\_\_\_\_\_

 (Round to two decimal places as needed)

 O=\_\_\_\_\_\_\_

 (Round to two decimal places as needed)

Is it unusual for a team to win in four games? Choose the correct answer below.

1. Yes, because the probability that a team wins in four games is greater than 0.05.
2. No, because the probability that a team wins in four games is less than or equal to 0.05.
3. No, because the probability that a team wins in four games is greater than 0.05.
4. Yes, because the probability that a team wins in four games is less than or equal to 0.05.