

A.P. Statistics
Assignment 5-3

Remember to show your thinking through your work.

1. There are 5 seniors in a class. For each situation, write how the binomial formula is used to calculate the probability.

a. In how many ways can I choose 1 senior to represent the group?

b. In how many ways can I choose two seniors to represent the group?

c. In how many ways can I choose three seniors to represent the group?

d. In how many ways can I choose four seniors to represent the group?

e. In how many ways can I choose five seniors to represent the group?

2. If Joey makes 76% of his free throws, how many free throws would you expect him to make in a season if he shoots a grand total of 120 shots over the course of the season?

3. The University of Washington claims that it graduates 85% of its basketball players. An NCAA investigation about the graduation rate finds that of the last 20 players entering the program only 11 graduated. If the university's claim is correct, the number of players among the 20 should follow the binomial distribution $B(20, 0.85)$.

a. What is the probability that 11 out of the 20 would graduate? Write how the binomial formula is used to calculate the probability.

b. To what extent do you think the university's claim is true?

- c. What is the probability that all 20 athletes would have graduated? Write how the binomial formula is used to calculate the probability.

- d. Find the mean and standard deviation of the number of graduates out of the 20 players.

4. In the fall, you go to the local nursery and purchase a package of 10 rose plants. The clerk informs you that on average you can expect 5% of the plants to not live through the winter. Assume that the plants are a random sample.

- a. Use the binomial formula to determine the probability that one or more of the plants will not survive the winter.

- b. What is the probability that all the plants will survive? Write how the binomial formula is used to calculate the probability.