Probability and Statistics _____
Binomial Distribution Name
Jury Selection

A woman in our area was tried in a controversial case that could possibly have been swayed by the gender make-up of the jury. There were over 200 people from which the jury pool was selected. For this lesson we will consider that there were only 200 people considered and that there were an equal number of men and women.

1. Calculate the possible configurations (combinations) for a binomial distribution of the 12 member jury.

2. Calculate the possible number of combinations for making the 12 member jury that is chosen from a jury pool of 200 people.

3. List the possible outcomes of a jury composed of at least eleven men.

4. Pick one of the outcomes with eleven men. Use the multiplication principle to compute the probability of that outcome.

5. Use the N-spire calculator to complete the following table. Give the calculator the appropriate command to generate combinations possible for the 12 member jury; choices are made from two possible choices----men, women. Men will be represented with the number one (1) and women will be represented with the number two (2).

Simulation Number	Sample Space	Number of Men	Number of Women
1			
2			
3			
4			
5			
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24			
25			

6. Where you able to find a combination that had an equal number of men as women?
7. How many sets of numbers had to be generated to find, if possible, to have a combination of more men than women?
8. How large a sample should you have for the generated combinations to be more acceptable?
9. On the basis of your data, what is the probability of obtaining a jury with at least eleven men on it?
10. How does your result in question 7 differ from your prediction in question 2?

11. Do a two-variable stats to calculate and compare the mean, median, and sample standard deviation for the selection of men versus women in the forty generated sample spaces.

	Men	Women
Mean		
Median		
Standard Deviation		

NOTES

Remember that the probability distribution for X can be found as follows:

For $0 \leq r \leq n$, $P(X = r) = C(n,r) \times P^{r} \times q^{(n-r)}$

Thought question:

Should lawyers and prosecutors be very aware of the gender of a jury, especially for particular types of trials? Explain.

12. Use the N-spire calculator to complete the following table. Give the calculator the appropriate command to generate combinations possible for the 12 member jury; choices are made from two possible choices----men, women. Men will be represented with the number one (1) and women will be represented with the number two (2). Where you able to find a combination that had an equal number of men as women? This time you will generate 40 combinations.

Simulation Number	Sample Space	Number of Men	Number Of Women
1			
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9			
10			
11			
12			
13			

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40			

13. How many sets of numbers had to be generated to find, if possible, to have a combination of more men than women?
14. How large a sample should you have for the generated combinations to be more acceptable?
15. On the basis of your data, what is the probability of obtaining a jury with at least eleven men on it?
16. How does your result in question 7 differ from your prediction in question 2?

17. Do a two variable stats to calculate and compare the mean, median, and sample standard deviation for the selection of men versus women in the forty generated sample spaces.

	Men	Women
Mean		
Median		
Standard Deviation		

Teacher Notes

Students need to have at least an introductory understanding of binomial distribution to complete this exercise. Without this understanding they will not realize that all the information in the problem relates itself to the definition of binomial.

The information is based upon a case that originally had over 500 members of the jury pool. The number was reduced to a little over 200 from which the opposing council finally picked 12 members with three alternates. One juror was dismissed and the alternate had to take that person's place.

To generate random integers begin by selecting the Catalog: