

Table Number: _____

Group Name: _____

Group Members: _____

PROBABILITY NOTATION AND VOCABULARY REVIEW

BINOMIAL PROBABILITIES STEP-BY-STEP

- Write each statement in probability notation.
For example, the probability that less than 5 students wear glasses would be written as: $P(x < 5)$
 - the probability that at least 23 students wear glasses
 - the probability that exactly 25 students wear glasses
 - the probability that 10 or more students wear glasses
 - the probability that more than 17 students wear glasses
 - the probability that less than 25 students wear glasses
 - the probability that at most 20 students wear glasses
- Now go back to each statement above and re-write the probability using only an **equal sign** or a **less than or equal to sign (\leq)** and **properties of the complement**, if needed.
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- Now suppose that the class has 30 people, and that 61% of Americans wear glasses. Write the command you would use on your calculator, `binompdf` or `binomcdf`, to calculate the above probabilities, then calculate them.
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BINOMIAL PROBABILITIES PRACTICE

4. In a school survey 68% of the students have an Android device. For each of the following problems, calculate the following. Round to 2 decimals if needed.
- a) What is the probability that exactly 11 students of a selection of 20 have Android devices?
 - b) What is the probability that out of 20 classmates, 12 or fewer have an Android device?
 - c) What's the probability that out of 20 classmates, at least 12 have an Android?
 - d) What is the probability that less than 10 have an Android?
 - e) What is the probability that more than 12 have an Android?

VOCAB: POPULATION, SAMPLE, PARAMETER, STATISTIC

For each of the following scenarios, describe the population, sample, statistic, and parameter (if applicable).

Example: Sunnyvale has 13,567 residents. In a survey of 50 likely voters conducted the week before the election, 67% said that they were planning on voting for Candidate A.

Population: All of the voters in the election

Sample: the 50 likely voters

Parameter: the percent of voters who actually voted (or will vote) for Candidate A

Statistic: the 67% of those sampled who said they would vote for Candidate A

5. A survey of 1353 American households found that 18% of the households own a computer.

Population:

Sample:

Parameter:

Statistic:

6. The average weight of every sixth person entering the mall within a 3-hour period was 146 pounds.

Population:

Sample:

Parameter:

Statistic:

7. The average salary of all assembly-line employees at a certain car manufacturer is \$33,000.

Population:

Sample:

Parameter:

Statistic:

8. The average late fee for 360 credit card holders was found to be \$56.75.

Population:

Sample:

Parameter:

Statistic:

9. A researcher caught and weighed 20 ring-tailed lemurs before releasing them and found their average weight to be 2.05 kg.

Population:

Sample:

Parameter:

Statistic:

10. 42% of students in a Statistics class last spring earned a grade of 90% or better on the first Exam.

Population:

Sample:

Parameter:

Statistic:

Fill in the blanks for the given scenarios.

11. The mean GPA of all 5000 students at a college is 2.25. A sample of 75 GPAs from this school has a mean of 2.27.

$\mu =$ _____ $\bar{x} =$ _____

12. There are 10,000 people in a particular city. The 2010 census reported that 25% of the community was African-American. A newspaper conducts a poll of 118 people in the city and finds that 37 of them are African-American.

$p =$ _____ $\hat{p} =$ _____

For each of the following, determine whether the **bolded value** is a parameter or statistic. Then give the correct notation (μ or \bar{x} or p or \hat{p}) for the quantity described and its value.

13. The average age of Members of the House of Representatives at the beginning of the 113th Congress was **57.0 years**.

Parameter statistic

13. _____

14. A 2018 Pew Research study found that **78%** of respondents age 18-24 used Snapchat daily.

Parameter statistic

14. _____

15. The average lifespan of 100 lightbulbs tested from a certain factory was **1,180** hours.

Parameter statistic

15. _____

16. According to the 2015 National Survey on Drug Use and Health (NSDUH), **86.4** percent of people ages 18 or older reported that they drank alcohol at some point in their lifetime.

Parameter statistic

16. _____

17. Voter records showed that **58 percent** of eligible voters went to the polls during the 2016 election.

Parameter statistic

17. _____

18. In a study conducted for the *Journal of the American Academy of Nutrition and Dietetics*, researchers ordered takeout from 123 restaurants in Boston, San Francisco and Little Rock, Arkansas. These restaurant meals contained an average of **1,205** calories.

Parameter statistic

18. _____

19. In the 2015-16 academic year, **91%** of classes at Kent State University had 50 or fewer students.

Parameter statistic

19. _____

20. The Fall 2015 Freshman class at Kent State had a mean high school cumulative GPA of **3.36**.

Parameter statistic

20. _____