Name:_____

Teacher:_____

Class/ Block:_____

Date:_____

Unit 3: Statistical Studies Review

Know the following definitions:

Box and whisker plot, convenience sampling, histogram, null hypothesis, alternative hypothesis, population, treatment, test group, control group, variable of interest, open question, closed question, simple random sample, frequency table, pie chart, dot plot

1. Mr. Cooper thinks the 320 students participating in after-school activities would pay attention more if they had a snack immediately after school. A random sample of 50 students were selected to participate in a study; 40 students were given a snack and 40 students were not. Both groups were instructed to complete several activities as Mr. Cooper monitored their behavior. A. What is the population? B. What is the treatment?	a. 320 students participating in after-school activities. b. Snack
2. Using the values below, find the 5-number summary and create the box and whisker plot (all must labeled correctly) 53, 51, 51, 54, 56, 32, 45, 28, 37, 44, 48, 61, 59, 38, 44	The 5-number summary is: LE – 28 UE – 61 Median – 48 1st Quartile – 38 3rd Quartile - 54
3. Neurologists at Yale Medical Center developed a study to determine if left-handed people were more intelligent than right-handed people in the United States. The research team selected 400 people in each of the three regions to take the survey. A. Find the sampling method. B. Identify the population	A. Sampling method is stratified B. Population is left-handed and right-handed people in the united States

4. The host for Myth busters wanted to determine who has a higher level of patience – elementary school or high school teacher. A mass email was sent to every teacher in Cobb County and the first 150 that responded were selected to participate in an experiment. The host thought the level of patience of elementary teachers was 3 times higher than that of a high school teacher. A. What's the null and alternative hypothesis? B. What is the sampling method?	A. Null hypothesis: Elementary teachers in cobb County have a level of patience 3 times higher than high school teachers. Alternative hypothesis – Elementary teachers do not have a level of patience 3 times higher than high school teachers. B. Sampling method is convenience method.
5. The host for Myth busters wanted to determine who has a higher level of patience – elementary school or high school teacher (there are 475 teachers in Cobb County). A mass email was sent to every teacher in Cobb County and the first 150 that responded were selected to participate in an experiment. What's the population? What's the type of study? What's the variable of interest?	Population is Elementary and high school teachers in Cobb county Type of study is an observation (although not detailed) Variable of interest is level of patience
6. The conditioning training of South Cobb football program is believed to be less intense than McEachern's….can this be? A student decided to conduct a study and began to develop an experiment. What phase of the research cycle does this fall in?	Phase is design cycle in research cycle.
7. The conditioning training of South Cobb football program is believed to be less intense than McEachern's….can this be? A study was conducted at each school- 50 athletes performance in each program was monitored (interviewed about dietary intake) for a series of 14 days. Data was tabulated and compared. A. What is the type of study? B. What is the population? C. What is the variable of interest? D. What is the sample size?	A. Observation – participants were observed and interviewed. B. Population are athletes in football program C. Variable of interest is intensity level of program D. Sample size is 100 students (50 at each school).

8. You bought a bag of Doritos out the school vending machine and noticed that it has so much air in it. The company claims that there are at least 135 chips in one 8 oz bag. A. Write the null hypothesis. B. Write the alternative hypothesis.	A. Null hypothesis: A bag of Doritos contains at least 135 chips in it. B. Alternative hypothesis: A bag of Doritos contains less than 135 chips in it.
9. Find the 5-number summary (label correctly) and create the box-and-whisker plot. 32, 38, 34, 38, 31, 32, 39, 34, 37, 31, 35, 38	5-number summary: LE – 31 UE – 38 Median – 34 1st Quartile – 32 3rd Quartile - 38
10. Given the following question: Seniors at South Cobb should not have to adhere to the dress code. A. Create an open question (CANNOT START WITH "WHY") B. Create a closed question with responses	Responses vary
11. Given the following biased question: Are parent's academic expectations of you too high? A. Rewrite as an unbiased (effective) open question.	Responses vary
12. Given the following biased question: Are parent's academic expectations of you too high? B. Rewrite as an unbiased (effective) closed question with responses.	Responses vary
13. Baskin Robbins claims customers are served in at most 3 minutes after placing their orders; you think this claim is exaggerated. A. Write the null hypothesis. B. Write the alternative hypothesis.	A. Null hypothesis: Baskin Robbins' customers wait at most 3 minutes after placing their orders. B. Alternative Hypothesis: Baskin Robbins' customers wait more than 3 minutes after placing their orders.

14. Coke, Inc. distributed samples of a new beverage to all households in 15 randomly selected states out of the 50 states in the U.S. What is the sampling method?	Sampling method is cluster sampling because all households in 15 states.
15. Coke, Inc. distributed free samples of a new beverage to 1,200 randomly selected households in each of the 4 regions located in the U.S. What is the sampling method?	Sampling method is stratified sampling because an equal proportion is selected in each region.
16. Pepsi, Inc. wanted to know what flavor to add to an upcoming beverage line. Personnel was sent out to 1300 grocery stores around the country and interviewed customers. What's the sampling method?	Sampling method is simple random sampling because surveyors didn't have any particular method to select customers.
17. Given the data below, identify the 5-number summary: 12, 12, 11, 9, 7, 13, 14, 14, 21, 20, 19, 11	5 number summary: LE – 7 UE – 21 Median – 12.5 1st Quartile – 11 3rd Quartile – 16.5
18. Nutritionists at the Mayo Clinic claim long-term exposure to additives hinders emotional maturity in adolescents. A. Write the null and alternative hypothesis with the correct notation.	Null hypothesis: Long term exposure to additives hinders emotional maturity in adolescents. Alternative hypothesis: long term exposure to additives does not hinder emotional maturity in adolescents.
19. Given the biased question, rewrite as an open question. Why do you agree that school should start at 9:00 am?	Responses vary.
20. Shouldn't students be able to park for free on campus? Yes No Rewrite as an effective closed question.	Responses vary
21. Domino's pizza guarantees a delivery time of less than 25 minutes. Write the null and alternative hypothesis.	Null hypothesis: The delivery time of Domino's pizza is less than 25 minutes. Alternative hypothesis: The delivery time of Domino's pizza is 25 minutes or more.