For full credit circle answers and **show all your work**.

1. The Visniak Bottling Plant in Cheektowaga, New York, has been accused of systematically under filling 12-ounce bottles of soda. An inspection team enters the plant one afternoon and selects bottled soda ready for shipment from various locations within the plant. The contents of each selected bottle are carefully measured.
* Identify the **population** in this study: * Identify the **sample** in this study:

2. Consider the students in your statistics class as the population and suppose they are seated in four rows of 10 students each. To select a sample, toss a coin. If it comes up heads, you use the 20 students sitting in the first two rows as your sample. If it comes up tails, you use the 20 students sitting in the last two rows as your sample. Does every student have an equal chance of being selected for the sample?
A) No, the coin flip does not ensure an equal chance of being selected.

B) Yes, your seating location ensures an equal chance of being selected.

C) Yes, your seating location and the randomized coin flip ensure equal chances of being selected.

D) No, your seating location does not ensure an equal chance of being selected.

3. Is your sample in #2 a simple random sample? Choose the best answer:
A) No, this is not a simple random sample. It is a cluster sample.

B) No, this is not a simple random sample. It is a stratified sample.

C) No, this is not a simple random sample. It is a systematic sample.

D) Yes, this is a simple random sample.

4. What is the average miles per gallon (mpg) for all new cars? Using *Consumer Reports*, a random sample of 35 new cars gave an average of 21.1 mpg. What is the variable?

A) new cars   C) miles per gallon

B) all cars   D) total miles driven

5. Suppose you want to conduct a survey of benefits packages available in private businesses in Hawaii. You want a sample size of 100. Which type of sample is it if you group the businesses according to type: medical, shipping, retail, manufacturing, financial, construction, restaurant, hotel, tourism, other. Then select a random sample of 10 businesses from each business type.

A) simple random sample   C) stratified sample

B) systematic sample   D) convenience sample

6. Are data at the ordinal level of measurement quantitative or qualitative?

A) Quantitative   C) Qualitative

B) Both quantitative and qualitative   D) Neither quantitative nor qualitative

7. What is the average miles per gallon (mpg) for all new cars? Using *Consumer Reports*, a random sample of 35 new cars gave an average of 21.1 mpg. What is the variable?

A) miles per gallon

B) all cars

C) new cars

D) total miles driven

8. Suppose you want to conduct a survey of benefits packages available in private businesses in Hawaii. You want a sample size of 100. Which type of sample is it if you use postal ZIP Codes to divide the state into regions. Pick a random sample of 10 ZIP Code areas and then include all the businesses in each selected ZIP Code area.

A) cluster sample

B) systematic sample

C) simple random sample

D) convenience sample

The following data represent **all** the scores for our Stat 2610 class after three quizzes.

22	50	72	78	87	90	97
27	55	73	78	87	93	98
40	60	73	78	88	93	100
42	62	73	80	88	93	
48	63	77	83	88	95	
50	63	78	87	88	95	

9. Divide the data into eight classes. What is the class width: _____

10. Make a frequency table for the above data.

Class limits		Frequency	Cum. Freq.	Rel. Freq.

11. Using the data from #10, construct a histogram. 12. Using the data from #10, construct an Ogive graph.

13. Using the data from #10, construct a Pareto chart. 14. Using the data from #10, construct a circle graph.

Let the top row (22, 50, 72, 78, 87, 90, 97) represent a sample of our class data.

15. Calculate the population mean
to one decimal place: _____

16. Calculate the sample mean to one decimal _____

17. Which symbol best represents the
finding in #15:

   A) μ B) σ

   C) $\bar{x}$ D) s

18. Which symbol best represents the finding in #16:

   A) μ B) σ

   C) $\bar{x}$ D) s

19. Calculate the population standard deviation to two decimals. If you need a formula, then try: $\sqrt{\frac{\Sigma(x-\mu)^2}{n}}$

20. Which symbol best represents the finding in #19:

   A) μ B) σ

   C) $\bar{x}$ D s

21. Give the five number summary and construct a Box and Whisker plot from the class data (population) identifying any outliers.

22. List three statistics that measure the center of a data set:

23. List three statistics that measure the spread of a data set: