

Name: Key Date: _____ Period: _____

**Secondary Math 3 Honors
Module 8 Test Review
Statistics**

For #1-3, use the following context:

The birth weights of African lions are normally distributed. The average birth weight of an African lion is 3.6 pounds with a standard deviation of 0.4 pounds.

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| 1. What percent of newborn African lions weigh less than 3 pounds? | 2. What percent of newborn African lions weigh more than 3.8 pounds? | 3. What percent of newborn African lions weigh between 2.7 and 3.7 pounds? |
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$\text{normalCDF}(-1E99, 3, 3.6, 0.4)$
= 6.7%

$\text{normalCDF}(3.8, 1E99, 3.6, 0.4)$
= 30.9%

$\text{normalCDF}(2.7, 3.7, 3.6, 0.4)$
= 58.6%

or use z-scores & z-score tables

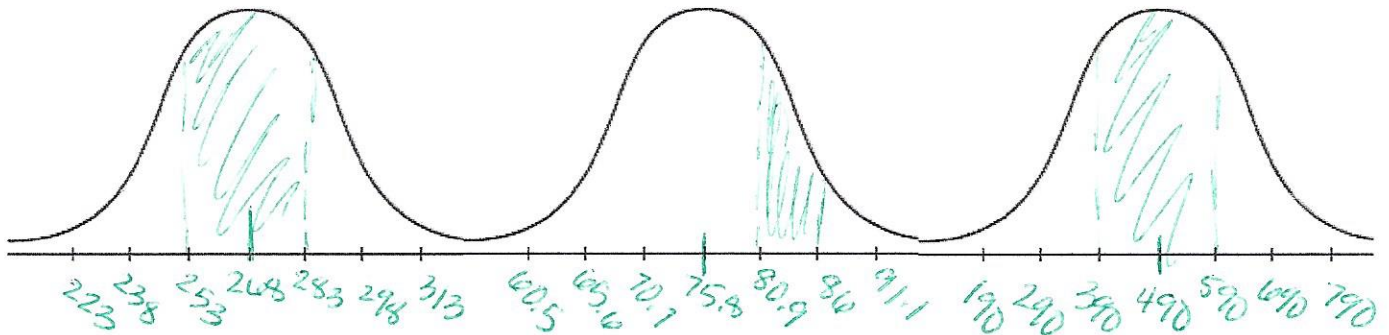
For #4-6, determine the percent, and fill out and label the normal curve correctly.

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| 4. Determine the percent of pregnancies with a duration between 253 and 283 days, given that the mean duration of a pregnancy is 268 days and the standard deviation is 15 days. | 5. Determine the percent of students who will get a grade between 80.9 and 86 on an upcoming math test, given that the professor's tests are normally distributed with a mean of 75.8 and a standard deviation of 5.1. | 6. Determine the percent of students who score between a 390 and 590 on the verbal section of a standardized test, given that the mean score is 490 and the standard deviation is 100. |
|--|--|--|

68%

$\frac{1}{2}(95) - \frac{1}{2}(68) = 13.5\%$

68%



For #7-8, determine the population, sample, and parameter of interest for each situation given.

7. A television reporter interviewed travelers stranded at an airport during a snowstorm about the efficiency of air travel in Canada.

Population: all travelers who have traveled in Canada.
Sample: travelers stranded that were interviewed.
Parameter of interest: efficiency of air travel in Canada.

8. A soap company distributed free samples of a new laundry detergent to all households in several randomly selected neighborhoods. The company then called the homes that had the free samples to ask them how they liked the new laundry detergent or not.

Population: all laundry users
Sample: households selected in neighborhoods
Parameter of interest: how they liked new laundry detergent

For #9-15, determine if the following sampling methods are: convenience, volunteer, simple random, cluster, stratified, or systematic.

9. Select three students from a class to receive ice cream by putting all the students' names in a hat and picking out three names randomly.

simple random sample

10. Select three female students and three male students to receive ice cream by putting all the men's names in one hat and all the women's names in a different hat and picking out three names from each hat.

stratified

11. Divide the class into four groups (freshman, sophomore, junior and senior) and take a random sample of two students from each group.

stratified

12. Priceline.com randomly e-mails a Customer Satisfaction Survey for certain transactions done on its site in which customers choose to either respond or not.

volunteer

13. A radio station asks its listeners to call in their opinion regarding the use of American forces in peacekeeping missions.

convenience

14. In an effort to determine customer satisfaction, United Airlines randomly selects 50 flights during a certain week and surveys all passengers on the flights.

cluster

15. In order to estimate the percentage of defects in a recent manufacturing batch, a quality control manager at Intel selects every 8th chip that comes off the assembly line starting with the 3rd, until she obtains a sample of 140 chips.

systematic

Determine whether the following are an: experiment, observational study, or survey.

16. A Stat 113 instructor announces a study session to be held the night before a test. The instructor lists the students who attended the session and compares their scores to the remaining Stat 113 students' scores.

observational study

17. To determine whether a review session will improve his students' test scores, a Stat 113 instructor divides his class into two groups. He then requires one group to attend a study session and compares the test results of each group.

experiment

18. To determine if a review session was helpful in improving his students' test scores, a Stat 113 instructor has students fill out a card asking them if they attended the review session and if it helped them do better on the test.

survey

For #19-20, find the z-score and according percentage using your z-score table.

19. Standardized test scores on a particular test are normally distributed with a mean of 55 and a standard deviation of 7. What is the z-score for a score of 63? What is the percent below 63? Above 63?

$$z = \frac{63 - 55}{7} = \frac{8}{7} = 1.14$$

% below: 87.29%

% above: $100 - 87.29 = 12.71\%$

20. Women's shoe sizes are normally distributed with a mean of 7 and standard deviation of 0.75. What is the z-score for a shoe size of 7.5? What is the percent below 7.5? Above 7.5?

$$z = \frac{7.5 - 7}{0.75} = 0.67$$

% below: 74.86%

% above: $100 - 74.86 = 25.14\%$