



The Scholars' Academy

Mission Statement: To Prepare for College and Careers of the 21st Century
"Technology Today, Smarter Tomorrow: Removing Time and Place from Teaching and Learning"

27Q323 is an Accelerated College Preparatory School for Grades 6-12

320 Beach 104 Street, Rockaway Park, NY 11694

<http://schools.nyc.gov/SchoolPortals/27/Q323>

Tel: (718) 474-6918 Fax: (718) 945-8958

Principal
Brian O' Connell

Assistant Principals
Math/Arts: Michele Smyth
Humanities/Foreign Language: Toni Marie Sorrentino
Science/Technology/Safety/PE: Scott Milczewski

Welcome to AP Statistics **Summer Performance Based Task**

Focus Question: What are the real life applications of the normal distribution and five-number summary?

Course: AP Statistics

Due Date: September 11th

Key Common Core Standards:

S-ID.4 Use the mean and standard deviation of a data set to fit it to a normal distribution and to estimate population percentages. Recognize that there are data sets for which such a procedure is not appropriate. Use calculators, spreadsheets, and tables to estimate areas under the normal curve.

Task Overview:

For many years, high school students have taken the SAT as part of the college admissions process. The SAT has undergone regular changes over time, but, until recently, test takers have always received two scores: SAT Math and SAT Verbal. Motivated by the findings of a blue ribbon panel in 1990 and threats by the mammoth University of California system to discontinue use of the SAT in its admissions process, the College Board decided to add a Writing section to the test. This section includes multiple-choice questions based on grammar and usage, as well as a timed, argumentative essay. At the same time, the existing Verbal and Math sections of the test underwent major content revisions. Analogies were removed from the Verbal section, which was renamed Critical Reading. In the Math section, quantitative comparison questions were eliminated, and new questions testing advanced algebra content were added.

In March 2005, the College Board administered the new SAT for the first time. Students, parents, teachers, high school counselors, and college admissions officers waited anxiously to hear about results from the new exam. Would the scores on the new SAT be comparable to previous years? How would students perform on the new Writing section (particularly the timed essay)? In the past, boys had earned higher average scores than girls on both Verbal and Math sections. Would similar gender differences emerge on the new SAT?

1. A **five-number summary** consists of the minimum, first quartile, median, third quartile, and maximum, written in order. Create a five number summary for males, females, and the entire school.
2. Create data displays for males, females, and the entire school using **one** of the following: histogram, cumulative frequency histogram, or a box-and-whisker plot.
3. Who did better, males or females? How do you know?

Part 3

In a well-developed paragraph, answer the following:

- Are the distributions for males and females approximately normal? How do you know?
- How did the school perform compared to the national average? How did males perform compared to the national average? How did females perform compared to the national average? Be sure to describe the mean and spread of the data for each subgroup and the whole.

Name _____

Class _____

Rubric for Statistics Summer Performance Based Assessment

Category	Level 4	Level 3	Level 2	Level 1
Normal Distribution (Part 1)	All three questions are answered accurately. Full understanding is shown. All work is submitted, including any work shown on the normal curve.	All three questions are answered accurately. A partial understanding of the Normal distribution is demonstrated. Some work may be missing or explanations may be incomplete.	A limited understanding of the Normal distribution is shown. Either one or two answers are incorrect, or no work is shown.	Limited to no understanding of the Normal distribution. All three answers are incorrect and work is missing, incoherent, or irrelevant.
Five Number Summaries (Part 2, Question 1)	All three five-number summaries are accurate. A full understanding of five number summaries and how to find them on a calculator or by hand is demonstrated.	Two of three five-number summaries are accurate. A partial understanding of five number summaries and how to find them on a calculator or by hand is demonstrated.	One of three five-number summaries are accurate. Limited understanding of five number summaries and how to find them on a calculator or by hand is demonstrated.	No five-number summaries are accurate. Little understanding of five number summaries and how to find them on a calculator or by hand is demonstrated.
Data Display (Part 2, Question 2)	The chosen data display is accurate for all three groups. Full understanding of histograms, cumulative frequency histograms, and box-and-whisker plots is demonstrated.	The chosen data display is mostly accurate for all three groups. Minor mistakes are made (mis-labeled axes, inappropriate scale, etc.)	The chosen data display is partially accurate for all three groups. Some data is missing or the display is incomplete. Limited understanding is shown.	The chosen data display is mostly inaccurate for all three groups. Most of the data is missing. Little understanding is shown.
Analysis of Data (Part 2, Question 3)	Conclusions drawn are clearly supported by evidence from five-number summaries and data displays. Strong understanding is demonstrated	Conclusions drawn are mostly supported by evidence from five-number summaries and data displays. Some understanding is demonstrated	Conclusions drawn are partially supported by evidence from five-number summaries and data displays. Partial understanding is demonstrated	Conclusions drawn are not supported by evidence from five-number summaries and data displays. Little or no understanding is demonstrated
Paragraph (Part 3)	All parts are answered. Normal distribution is related to five number summaries and data displays. Mean and standard deviation are described for all three subgroups. All conclusions are clearly supported evidence.	All parts are answered. Normal distribution is related to five number summaries and data displays. Mean and standard deviation are described for all three subgroups. Some information may be incorrect, but accurate conclusions are drawn.	One part is answered. Information is partially correct, and inaccurate conclusions are drawn.	Questions are not answered or answers are not supported by given data.

Total Score _____