

CASE CLOSED

The New SAT

Review the information in the SAT Case Study (page 113).

Answer each of the following questions in complete sentences.

Be sure to communicate clearly enough for any of your classmates to understand what you are saying.

I. NORMAL DISTRIBUTION

1. Overall, the distribution of scores on the new Writing section followed a Normal Distribution with mean 516 and standard deviation 115.

(a) What percent of students earned scores between 600 and 700 on the Writing section? Show work.

(b) What score would place a student in the 65th percentile? Show work.

II. COMPARING OBSERVATIONS

2. In past years, males have earned higher mean scores on the Verbal and Math sections of the SAT. On the new Writing section, male scores followed a $N(491, 110)$ distribution. Female scores followed a $N(502, 108)$ distribution.

(a) What percent of male test takers earned scores below the mean score for female test takers?

(b) What percent of female test takers earned scores above the mean score for male test takers?

(c) What percent of male test takers earned scores above the 85th percentile of the female scores.

III. EXPLORING DATA, DETERMINING NORMALITY

3. Here are the writing scores on the new SAT for all test takers at a medium-sized private high school:

Male SAT Writing Scores											
660	530	580	610	540	550	470	600	550	550	640	640
540	520	430	580	490	710	670	570	700	520	530	630
500	440	460	520	760	560	530	570	690	570	610	570
620	700	720	630	720	530	690	690	530	580	540	520

Female SAT Writing Scores											
500	690	420	480	630	640	640	560	490	630	620	430
600	700	670	690	620	580	570	560	780	450	660	580
500	560	580	580	530	630	560	630	610	520	550	460
580	590	550									

(a) Did males or females at this school perform better? Give appropriate graphical and numerical evidence to support your answer.

(b) How do the scores of the males and females at this school compare with the national results? Write a few sentences discussing this issue.

(c) Is the distribution of scores for the males at this school approximately Normal? How about the distribution of scores for the females at this school? Justify your answers with appropriate statistical evidence.