

"Lies, damned lies, and statistics"

is part of a phrase attributed to the 19th Century British Prime Minister Benjamin Disraeli, among others, and later popularized in the United States by, among others, Mark Twain: "There are three kinds of lies: lies, damned lies, and statistics." The statement refers to the persuasive power of numbers, the use of statistics to bolster weak arguments, and the tendency of people to disparage statistics that do not support their positions

SAT® Data: Data in this report are for high school graduates in the year 2009. Information is summarized for seniors who took the SAT at any time during their high school years through March 2009. If a student took the test more than once, the most recent score is used.

Q1: From this data can you say:

"Younger the student, the SAT performance is better"

"As students get older, their SAT score performance will worsen"

Table 3: Year in Which Seniors Last Took the SAT

Scores are from the last administration in which seniors took the SAT.

SAT	Test-Takers Number	Critical Reading		Mathematics		Writing		Writing Sub-Scores			
		Mean	SD	Mean	SD	Mean	SD	Multiple Choice		Essay	
Senior (2008-2009)	1,016,606	491	109	505	113	483	107	48.3	10.7	7.1	1.7
Junior (2007-2008)	508,163	520	117	535	120	512	116	51.3	11.6	7.4	1.6
Sophomore (2006-2007)	4,787	527	138	552	135	519	134	52.4	13.3	7.1	2.0
Freshman (2005-2006)	572	482	121	513	118	463	111	47.3	11.4	6.4	1.7
Total	1,530,128	501	112	515	116	493	111	49.3	11.1	7.2	1.6

Q2: Do the score distributions follow normal distribution?

Is it skewed? Does it have fat tails?

Table 4: Percentiles for Total Group

A percentile represents the point below which a percentage of scores fall. Comparing the 25th percentile point to the 75th percentile point gives an idea of the range of performance in a group.

SAT Percentile	Total Group		
	Critical Reading	Mathematics	Writing
75th	580	600	570
50th	500	510	490
25th	420	430	410

Table 5: Score Distributions

The score ranges in the following table reflect SAT Skills Insight™, a resource that identifies skills demonstrated by typical students who score in each range. For more information and resources for educators and students, please visit www.collegeboard.com/sat-skills.

SAT Score Range	Critical Reading			Mathematics			Writing		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
700-800	36,243	36,768	73,011	61,885	35,411	97,296	27,392	36,141	63,533
600-690	118,449	122,513	240,962	163,008	132,685	295,693	96,186	125,987	222,173
500-590	216,948	247,610	464,558	213,002	236,236	449,238	198,038	244,590	442,628
400-490	216,839	268,659	485,498	186,290	268,207	454,497	237,869	267,484	505,353
300-390	98,937	119,324	218,261	73,391	124,350	197,741	126,820	124,532	251,352
200-290	23,952	23,886	47,838	13,792	21,871	35,663	25,063	20,026	45,089

Q3: Compare two students A and B

	A.	B.
First Language Learned	Another language	English
Citizen of	Another Country	U.S. Citizen / U.S. National
Plans to Apply for Financial Aid	Yes	No
Family Income	\$0 - \$20,000	More than \$200,000
Highest Level of Parental Education	No High School Diploma	Graduate Degree
Took the PSAT/NMSQT as a	No	Twice

Use the All test-takers basic statistic for answering the following questions.

What are the expected Mathematics scores of students A and B?

What assumptions are you making?

Plans to Apply for Financial Aid								
Yes	958,909	71	498	108	508	112	488	107
No	100,296	7	529	109	551	112	526	110
Don't Know	283,316	21	515	110	534	113	508	110
Family Income								
\$0 - \$20,000	103,764	10	434	103	457	119	430	102
\$20,000-\$40,000	150,969	15	462	101	475	108	453	98
\$40,000-\$60,000	149,331	15	488	102	497	106	476	99
\$60,000-\$80,000	149,596	15	503	101	512	104	491	99
\$80,000-\$100,000	128,524	13	517	101	528	104	505	101
\$100,000-\$120,000	106,234	11	525	101	538	103	516	101
\$120,000-\$140,000	54,004	5	529	100	542	103	520	101
\$140,000-\$160,000	40,945	4	536	101	550	103	527	101
\$160,000-\$200,000	46,109	5	542	102	554	104	535	103
More than \$200,000	67,326	7	563	103	579	104	560	105
No Response	533,326		502	121	520	124	497	119
Highest Level of Parental Education								
No High School Diploma	68,445	5	420	95	443	107	418	93
High School Diploma	422,310	31	464	97	474	103	454	94
Associate Degree	118,869	9	482	94	491	98	469	93
Bachelor's Degree	403,483	30	521	102	535	106	512	102
Graduate Degree	345,561	25	559	109	572	111	552	109
Took the PSAT/NMSQT®								
Yes, As a Junior	394,324	31	498	105	508	108	488	103
Yes, As a Sophomore or Younger	274,548	21	502	107	513	112	492	106
Yes, As a Junior and As a Sophomore or Younger	394,541	31	536	107	546	109	530	106
No	227,507	18	470	109	491	120	460	107

Table 11: Student Background Information and Characteristics

Student demographic information provides a broader context to aid in interpreting and understanding individual and group scores.

SAT	Test-Takers		Critical Reading		Mathematics		Writing	
	Number	Pct	Mean	SD	Mean	SD	Mean	SD
All Test-Takers	1,530,128	100	501	112	515	116	493	111
First Language Learned								
English	1,107,454	75	511	108	516	110	499	107
English and Another	223,868	15	482	114	506	125	480	114
Another Language	149,202	10	467	118	524	136	472	121
No Response	49,604		466	144	511	144	470	139
Citizenship								
U.S. Citizen / U.S. National	1,337,773	92	506	109	513	112	496	108
U.S. Permanent Resident or Refugee	47,255	3	463	124	509	134	467	126
Citizen of Another Country	64,316	4	486	122	583	130	499	120
Other, Unknown, or No Response	80,784		454	135	504	142	458	133

Q4: What data do you have to prove the following hypotheses?

“Male students are better test takers than female students”

“It is easy to get A’s in some high school than others”

Table 2: Mean Scores by Gender

SAT	Test-Takers	Critical Reading		Mathematics		Writing		Writing Sub-Scores			
		Number	Mean	SD	Mean	SD	Mean	SD	Multiple Choice	SD	Mean
Male	711,368	503	114	534	118	486	112	48.9	11.2	7.0	1.7
Female	818,760	498	110	499	112	499	110	49.7	11.1	7.3	1.5

Table 12: High School Rank

SAT	Test-Takers		Percent by Gender		Mean Scores		
	Number	Pct	Male	Female	Critical Reading	Mathematics	Writing
Highest Tenth	242,744	33	43	57	576	603	573
Second Tenth	197,439	27	46	54	512	534	505
Second Fifth	138,021	19	50	50	482	497	471
Final Three Fifths	147,741	20	51	49	441	448	430
No Response	804,183		46	54	489	500	481

Table 13: High School Grade Point Average

SAT	Test-Takers		Percent by Gender		Mean Scores		
	Number	Pct	Male	Female	Critical Reading	Mathematics	Writing
A+ (97–100)	80,757	6	40	60	599	621	597
A (93–96)	265,748	19	39	61	563	583	559
A- (90–92)	273,141	19	43	57	532	551	526
B (80–89)	655,666	46	48	52	474	484	464
C (70–79)	154,903	11	57	43	420	422	406
D, E, or F (below 70)	5,749	0	62	38	399	412	387
No Response	94,164		52	48	474	507	471
Mean Grade Point Average	All Students: 3.32		Male: 3.24		Female: 3.39		

Q5: Could you make the following statements from the data:

“If you take classes in Latin, your Critical Reading scores will go up.”

“If you take classes in Chinese, your Mathematics scores will go up.”

“The more the number of years you study foreign and classical languages, the more your mathematics scores will go up.”

Table 17: Foreign and Classical Languages

Foreign and Classical Languages	Test-Takers		Percent by Gender		SAT Mean Scores			
	Years of Study	Number	Pct	Male	Female	Critical Reading	Mathematics	Writing
More Than 4 Years	64,688	5	39	61	561	583	560	
4 Years	304,906	24	41	59	554	564	551	
3 Years	413,013	32	45	55	513	526	505	
2 Years	403,812	31	49	51	473	482	459	
1 Year	60,400	5	51	49	440	449	425	
1/2 Year or Less	41,248	3	55	45	422	446	411	
No Response	242,061		52	48	473	500	469	
Course Work or Experience								
Chinese	23,593	2	47	53	538	610	538	
French	214,458	17	37	63	525	529	517	
German	53,687	4	56	44	537	545	517	
Greek	3,818	0	54	46	549	553	542	
Hebrew	5,059	0	45	55	550	561	552	
Italian	28,316	2	43	57	503	511	499	
Japanese	21,265	2	50	50	532	561	516	
Korean	4,060	0	47	53	495	600	510	
Latin	76,868	6	49	51	561	561	548	
Russian	5,123	0	48	52	506	532	504	
Spanish	881,803	71	45	55	501	511	493	
Other Languages	40,381	3	42	58	481	510	478	
AP/Honors Courses	260,282	20	39	61	575	586	572	

Q6: If one has to choose between studying more of Arts and Music or foreign and classical languages, what will you suggest?

Does taking computer courses improve a student’s mathematics performance?

Table 18: Arts and Music, Computers

Arts and Music	Test-Takers		Percent by Gender		SAT Mean Scores			
	Years of Study	Number	Pct	Male	Female	Critical Reading	Mathematics	Writing
More Than 4 Years	63,211	5	40	60	531	544	522	
4 Years	255,744	20	38	62	534	536	526	
3 Years	169,767	13	40	60	506	512	498	
2 Years	269,190	21	46	54	501	513	493	
1 Year	321,979	25	50	50	497	516	489	
1/2 Year or Less	184,882	15	54	46	480	499	470	
No Response	265,355		52	48	476	503	472	
Course Work or Experience								
Acting or Play Production	195,928	17	34	66	541	532	531	
Art History or Appreciation	211,320	18	42	58	506	511	498	
Dance	138,793	12	11	89	496	498	497	
Drama: Study or Appreciation	169,235	15	33	67	521	514	512	
Music: Study or Appreciation	153,860	13	48	52	533	535	524	
Music Performance	420,105	36	42	58	529	537	521	
Photography or Film	218,834	19	38	62	517	520	508	
Studio Art and Design	261,622	23	38	62	520	526	512	
None	222,723	19	58	42	475	497	464	
AP/Honors Courses	94,654	7	37	63	572	575	564	

Computers	Test-Takers		Percent by Gender		SAT Mean Scores		
	Course Work or Experience	Number	Pct	Male	Female	Critical Reading	Mathematics
Computer Literacy	747,128	65	46	54	511	522	501
Computer Programming	211,967	18	56	44	502	525	492
Word Processing	771,357	67	45	55	512	522	502
Internet Activity	569,805	49	47	53	514	525	504
Using Computer Graphics	366,120	32	51	49	511	526	501
Creating Spreadsheets/Databases	377,293	33	47	53	516	532	507
None	151,701	13	38	62	501	512	496