



AP[®] Statistics 2002 Sample Student Responses Form B

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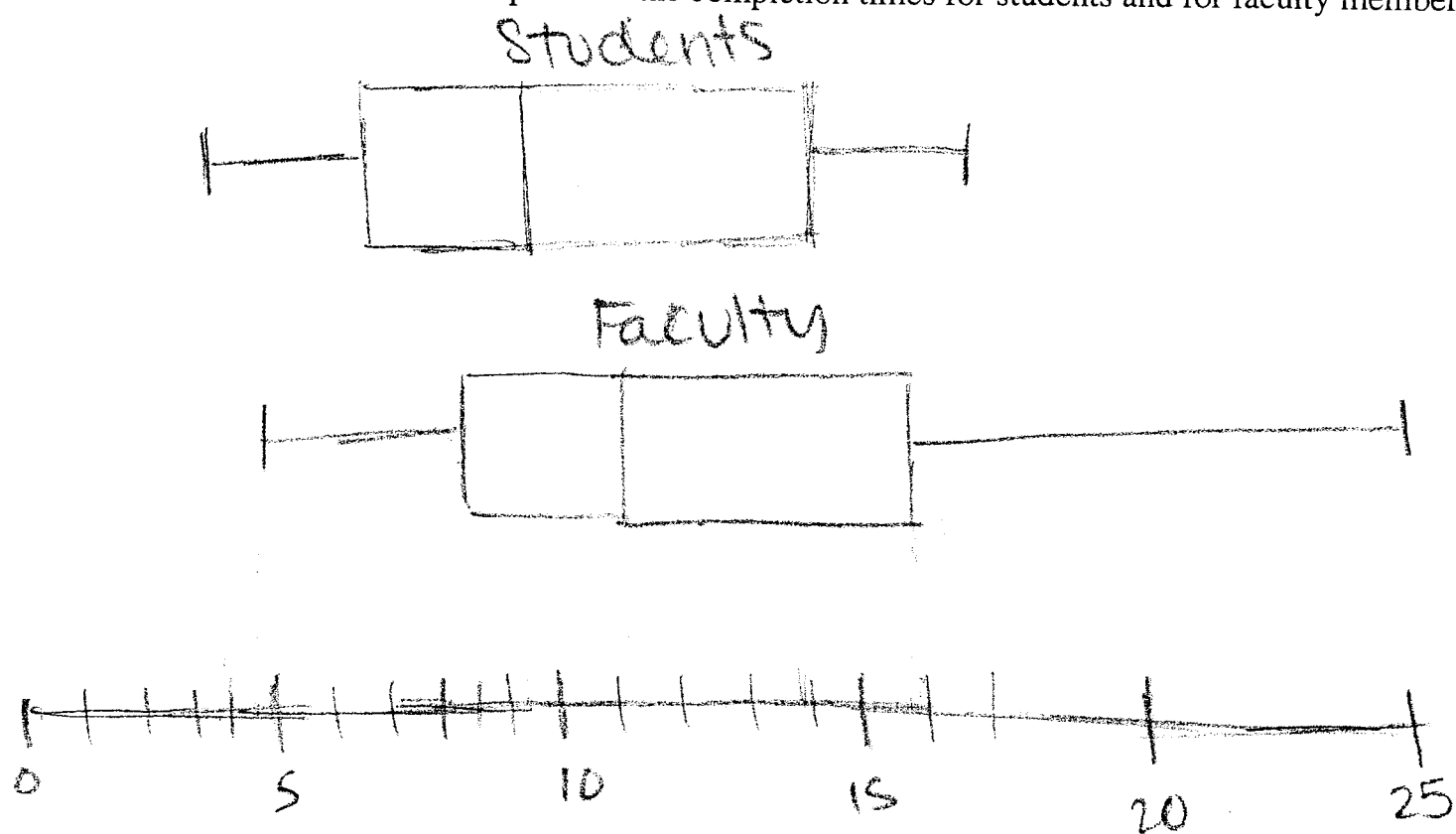
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5. At a school field day, 50 students and 50 faculty members each completed an obstacle course. Descriptive statistics for the completion times (in minutes) for the two groups are shown below.

	Students	Faculty Members
Mean	9.90	12.09
Median	9.25	11.00
Minimum	3.75	4.50
Maximum	16.50	25.00
Lower quartile	6.75	8.75
Upper quartile	13.75	15.75

- (a) Use the same scale to draw boxplots for the completion times for students and for faculty members.



Students

Min 3.75
 Q₁ 6.75
 Med 9.25
 Q₃ 13.75
 max 16.5

Faculty

Min 4.5
 Q₁ 8.75
 Med 11
 Q₃ 15.75
 max 25

(b) Write a few sentences comparing the variability of the two distributions.

The students range is 12.75 min and the faculty's range is 20.5 min. This is probably due to the fact that students are more active and use to physical challenges in their youth than teachers and other faculty members.

It is interesting to note that the mean, median, minimum and Q_1 and Q_3 scores are quite close. The difference in range comes because one teacher took 25 min to finish the race.

(c) You have been asked to report on this event for the school newspaper. Write a few sentences describing student and faculty performances in this competition for the paper.

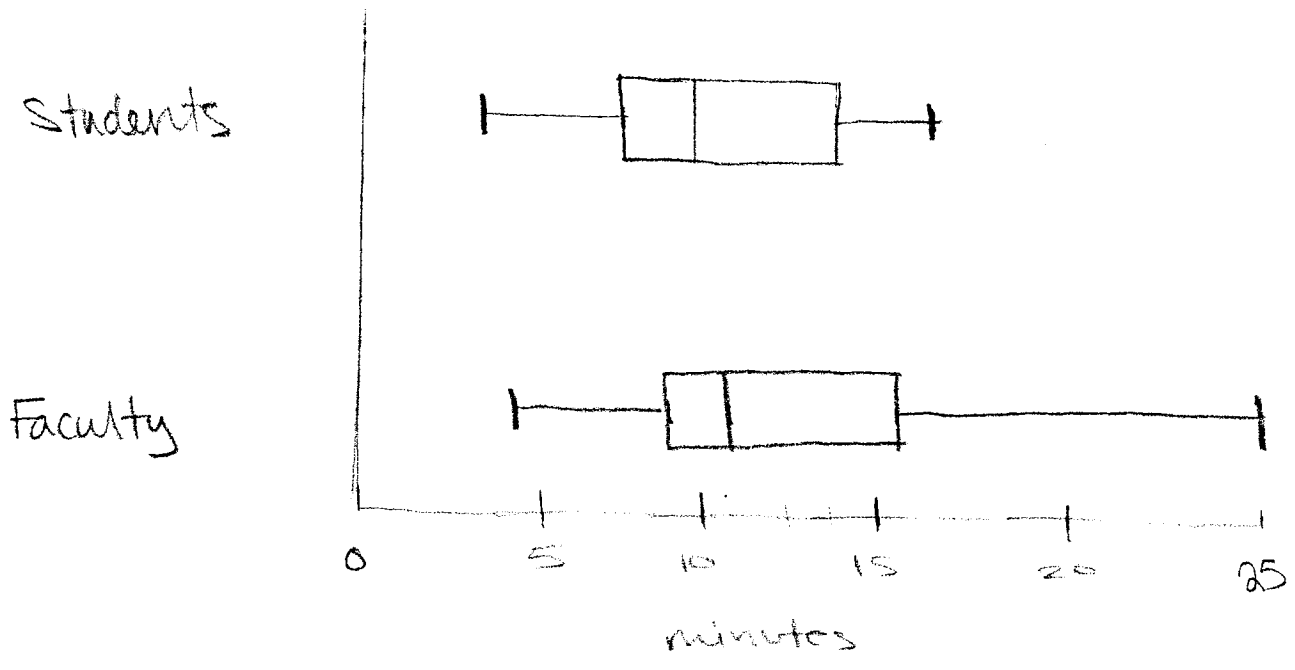
The students have a range of 12.75 min between the shortest & longest times while the teachers have a range of 20.5 min. While this seems like a large difference it may be noted that the means, medians and upper and lower quartile values are quite close. The large difference is because one teacher (who shall remain nameless) took a whopping 25 minutes to finish the obstacle course.

5. At a school field day, 50 students and 50 faculty members each completed an obstacle course. Descriptive statistics for the completion times (in minutes) for the two groups are shown below.

	Students	Faculty Members	X-Y
Mean	9.90	12.09	-2.19
Median	9.25 ✓	11.00 ✓	-1.75
Minimum	3.75 ✓	4.50 ✓	-0.75
Maximum	16.50 ✓	25.00 ✓	-8.5
Lower quartile	6.75 ✓	8.75 ✓	-2
Upper quartile	13.75 ✓	15.75 ✓	-2
Range	12.75	20.5	-7.75

IQR: 7
(both)

(a) Use the same scale to draw boxplots for the completion times for students and for faculty members.



(b) Write a few sentences comparing the variability of the two distributions.

The faculty had a much higher variability than the students. The ~~range~~ range of the faculty is 20.5 min, 7.75 min higher than the students. The interquartile range is the same, 7 min. The faculty's distribution is *strongly* skewed to the right, and the mean is 1.09 min higher than the median. The students' distribution is roughly symmetrical. The mean is 0.65 higher than the median, which suggests a slight skew to the right.

(c) You have been asked to report on this event for the school newspaper. Write a few sentences describing student and faculty performances in this competition for the paper.

In the student vs. faculty obstacle course, the students easily outperformed the faculty. On average, the students were 2.19 minutes faster than the faculty in completing the course. The fastest time and slowest times for the students, 3.75 min and 16.5 min, were both faster than the minimum and maximum times for the faculty, 4.5 min and 25 min. As a whole, the students were more consistent in their times, as shown by the range of 12.75 min, 7.75 min smaller than the faculty's range of 20.5 min!