

Constructing a Box & Whiskers Plot with the *fx-9750G PLUS* A Pre-Algebra Activity

Before beginning the activity below ask your class what position(s) they think the top career scoring NCAA players would play? (I was surprised to see so many kickers listed!)

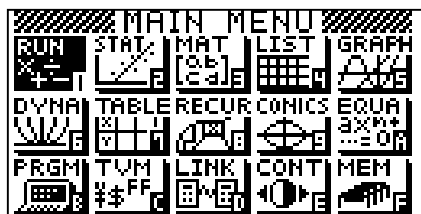
Division 1 Football
IA Active Career Leaders
Scoring – Total Points
2005 Season Through 1/4/06

Source <http://web1.ncaa.org>

Player	School	Position	Games – Total Pts
Taurean Henderson	Texas Tech	Sr Running Back	51 - 414
Stephen Gostkowski	Memphis	Sr Kicker	49 - 369
DeAngelo Williams	Memphis	Sr Running Back	44 - 362
DonTrell Moore	New Mexico	Sr Running Back	48 - 356
LenDale White	Southern California	Jr Running Back	39 - 342
Connor Hughes	Virginia	Sr Kicker	51 - 332
Wali Lundy	Virginia	Sr Running Back	49 - 312
Todd Pegram	Texas A&M	Sr Kicker	46 - 309
Brad Smith	Missouri	Sr Quarter Back	48 - 288
Brad Devault	Tulsa	Sr Kicker	45 - 280
Jon Peattie	Miami (Florida)	Jr Punter	37 - 272
Garrett Rivas	Michigan	Jr Kicker	37 - 261
Matt Prater	UCF	Sr Kicker	46 - 258
Darren McCaleb	Southern Mississippi	Jr Kicker	36 - 255
Ben Jones	Perdue	Sr Kicker	36 - 254
Reggie Bush	Southern California	Jr Running Back	39 - 252
Mason Crosby	Colorado	Jr Kicker	38 - 250
Nick Bazaldua	North Texas	Sr Kicker	47 - 247
Greg Jennings	Western Michigan	Sr Wide Receiver	42 - 246
Justin Medlock	UCLA	Jr Kicker	36 - 244

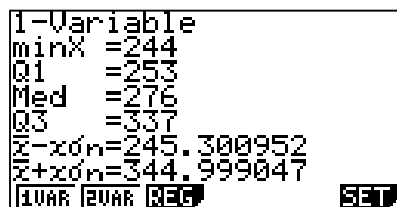
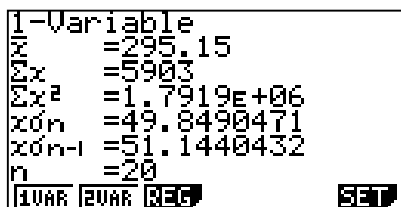
To construct a box and whiskers plot for career total points, you will need 5 landmark values – the maximum, the minimum, the median, the upper quartile and the lower quartile:

1. **Find the maximum.** This is easy since the points are listed in order from greatest to least. The maximum value is 414 (the points scored by the senior running back for Texas Tech, Taurean Henderson, in 51 games).
2. **Find the minimum.** The minimum value in our list is 244 (the points scored by senior kicker for Memphis, Stephen Gostkowski, in 49 games).
3. **Calculate the median.** There are 20 numbers in the list. Since the values are already in order, the median will be the average of 10th and 11th values. The average of 280 and 272 is 276. You can find the median on the calculator by choosing RUN on the MENU. Press OPTN, F1 (List), F6, F4 (Med), F6, F6, F1 (List) 1, close parentheses. Press EXE.



4. **Calculate the upper quartile (Q3).** The upper quartile is the median value of the upper half. In this case the upper quartile would be the average of the 5th and 6th values. The average of 342 and 332 is 337.
5. **Calculate the lower quartile (Q1).** The lower quartile is the median value of the lower half. In this case the lower quartile would be the average of the 15th and 16th values. The average of 254 and 252 is 253.

Good news! There is a much easier way. The calculator will find all of these values for you. Form the main MENU, select STAT, press F2 (CALC), F1 (1VAR) to calculate the one-variable statistics for the values in List 1.

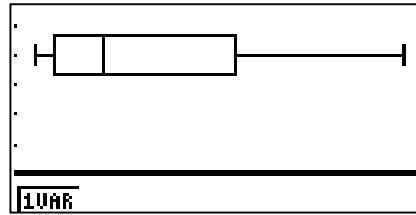


The calculator will also draw a box and whiskers plot to represent the data. From the main MENU, select STAT, F1 (GRPH), F6 (SET), F1 (GPH1). Highlight Graph Type, press F6, F2 (Box). Highlight XList, press F1 (List 1); highlight Frequency, press F1 (1). Highlight Outliers, press F2 (Off). Press EXE.

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StatGraph1
Graph Type  :MedBox
XList       :List1
Frequency   :1
Outliers    :Off

GPH1 GPH2 GPH3
  
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Press F1 (GPH1) to view the box and whiskers plot. To trace along the plot, press SHIFT F1 (Trace). Use the left and right arrow keys to show the landmark values. Ask your students why the plot is shaped like it is. Why is it skewed to the left? Why is the right Whisker so much longer than the left one?

