

Yankees VS. Mets

ID: 10997

Time required
40 minutes

Activity Overview

In this activity, students will compare two distributions. Graphical and numerical representations will be used to draw conclusions. Students will graph histograms side-by-side to make comparisons based on shape, center, and spread. They will graph box plots on the same axes comparing shape, spread, and the five-number summary.

Topic: Graphing and Numerical Distributions

- *Graphing distributions*
- *Calculating measures of central tendency and spread*
- *Comparing distributions and drawing conclusions.*

Teacher Preparation and Notes

- *Load files on student handhelds.*
- *The activity is created so students can work independently or in small groups. They struggle drawing conclusions and justifying them. It may be necessary to discuss valid conclusions towards the end of the activity. An additional data set is given to allow for further practice.*
- *If class time is short, have students complete Problem 1 during class and then complete Problem 2 for homework.*
- ***To download the student and solution TI-Nspire documents (.tns files) and student worksheet, go to education.ti.com/exchange and enter "10997" in the quick search box.***

Associated Materials

- *YankeesMets_Student.doc*
- *YankeesMets.tns*
- *YankeesMets_Soln.tns*

Suggested Related Activity

To download any activity listed, go to education.ti.com/exchange and enter the number in the quick search box.

- *Box Plots and Histograms (TI-Nspire technology) — 9843*

Problem 1 – Yankees vs. Mets

Visually comparing distributions

Students are given a table of data with salaries of the Yankees and Mets (the two teams with the highest salary totals in Major League baseball). They are asked to visually inspect it and draw conclusions. The conclusions should be vague since it is difficult to do from a table of values.

Note that the values in the spreadsheet have been shortened, so that 28 represents 28,000,000.

	yankee	ysalary	met	met salary
1	Alex Rodr...	28	Carlos Be...	18.6
2	Jason Gia...	23.4286	Johan San...	16.9
3	Derek Jet...	21.6	Carlos De...	
4	Andy Pett...	16	Pedro Ma...	11.8
5	Bobby Ab...	16	Billy Wagn...	

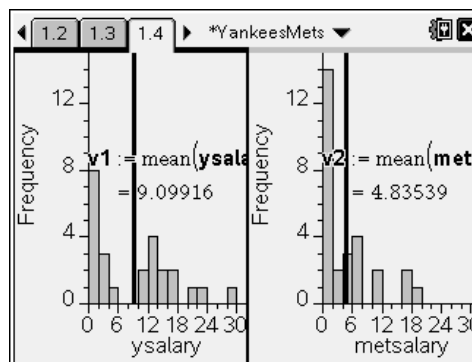
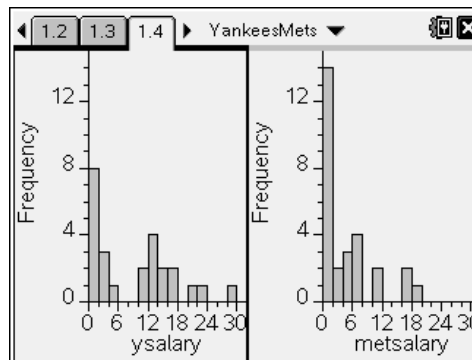
Comparing distributions using histograms

On page 1.4, students are to create two histograms, one for each data set. They should match the histogram with the caption at the top of each side of the screen. To create a histogram, students need to select “Click to add variable” and then choose the variable they wish to graph. Then press **MENU > Plot Type > Histogram** to change the dot plot to a histogram.

It is important that the histograms are drawn with the same scale on axes with the same increments. This takes two steps – one, adjusting the Histogram properties (bin settings) and two, adjusting the window settings. The student worksheet has appropriate settings. It is important for future problems that students understand how to determine appropriate settings.

In their comparison, students should include discussion of the mean and median. First have them estimate each and then they can use the **Plot Value** function to calculate them.

Remind students that since they are comparing real world data, their comparison should be in the context of the data.



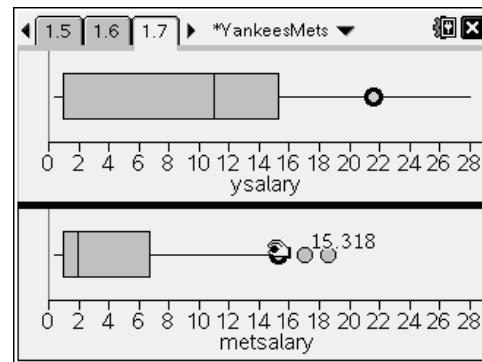
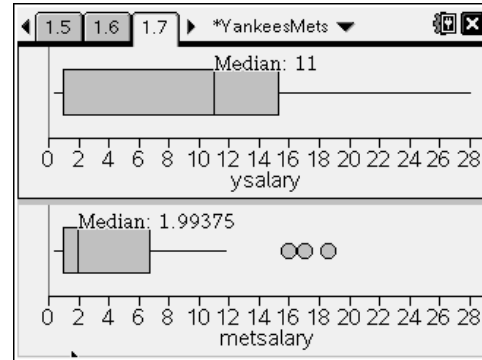
Comparing distributions using box plots

On page 1.6, students are to create box plots using a similar set of steps as to those used when creating the histogram. The box plots are created above each other to aid in comparing.

Again, it is important that the box plots are drawn with the same scale on the horizontal axis. The student worksheet has appropriate settings. It is important for future problems that students understand how to determine these numbers.

Students are to include the five-number summary in their comparison. The five numbers, minimum, lower quartile, median, upper quartile, and maximum can be determined by moving over that part of the box plot with the cursor. Note that the min and max appear just as numbers with no label.

After comparing and answering the questions on the worksheet, have students grab and drag one or more of the outliers. This will allow them to see how the box plot changes with extreme values.



Problem 2 – East vs. West

Students are to compare the birth rates of the eastern and western states in the United States. Page 2.3 is set up for students to compare histograms and page 2.4 is set to compare box plots.

The settings used for the histograms are:

Width: 2, Alignment: 21, XMin: -21, XMax: 21, YMax: 4.6

The settings used for the box plots are:

XMin: -21, XMax: 21

	A	B	C	D
	east	ebirthrate	west	wbirth
1	Vermont	17.58	Montana	
2	Connectic...	15.88	Nebraska	6
3	Massachu...	14.48	Kansas	4
4	New Jerse..	12.55	Iowa	4
5	Maine	9.33	Wyoming	4
A1	"Vermont"			