# 2003 Year End Top 20 Tours

<table>
<thead>
<tr>
<th>Rank</th>
<th>Total Gross</th>
<th>Artist</th>
<th>Total Gross</th>
<th>Avg. Ticket Price</th>
<th>Avg. Tickets</th>
<th>Total Tickets</th>
<th>Avg. Gross</th>
<th>Shows</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>115.9</td>
<td>Bruce Springsteen &amp; The E. St. Band</td>
<td>3,863,410</td>
<td>71.36</td>
<td>54,136</td>
<td>1,624,089</td>
<td>1/47</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>80.5</td>
<td>Celine Dion</td>
<td>555,494</td>
<td>135.81</td>
<td>4,090</td>
<td>593,120</td>
<td>1/145</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>69.3</td>
<td>Eagles</td>
<td>1,474,477</td>
<td>107.57</td>
<td>13,707</td>
<td>644,242</td>
<td>47/55</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>69.0</td>
<td>Fleetwood Mac</td>
<td>1,045,019</td>
<td>83.37</td>
<td>12,240</td>
<td>807,867</td>
<td>66/71</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>68.2</td>
<td>Cher</td>
<td>695,412</td>
<td>65.91</td>
<td>10,551</td>
<td>1,034,057</td>
<td>98/102</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>64.5</td>
<td>Simon &amp; Garfunkel</td>
<td>2,303,571</td>
<td>136.90</td>
<td>16,825</td>
<td>471,123</td>
<td>28/39</td>
<td></td>
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<tr>
<td>7</td>
<td>64.0</td>
<td>Aerosmith / KISS</td>
<td>1,142,857</td>
<td>76.08</td>
<td>15,021</td>
<td>841,199</td>
<td>56/58</td>
<td></td>
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<tr>
<td>8</td>
<td>60.5</td>
<td>Dixie Chicks</td>
<td>1,080,357</td>
<td>56.00</td>
<td>19,292</td>
<td>1,083,591</td>
<td>56/65</td>
<td></td>
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<tr>
<td>9</td>
<td>50.9</td>
<td>Billy Joel / Elton John</td>
<td>2,212,568</td>
<td>109.24</td>
<td>20,253</td>
<td>465,821</td>
<td>23/27</td>
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<tr>
<td>10</td>
<td>48.8</td>
<td>&quot;Summer Sanitarium Tour&quot; / Metallica</td>
<td>2,569,991</td>
<td>70.32</td>
<td>36,545</td>
<td>694,359</td>
<td>19/19</td>
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<tr>
<td>11</td>
<td>47.1</td>
<td>Dave Matthews Band</td>
<td>1,148,718</td>
<td>44.09</td>
<td>26,056</td>
<td>1,068,328</td>
<td>41/53</td>
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<tr>
<td>12</td>
<td>44.2</td>
<td>Toby Keith</td>
<td>425,177</td>
<td>37.95</td>
<td>11,201</td>
<td>1,164,931</td>
<td>104/104</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>40.8</td>
<td>Shania Twain</td>
<td>1,046,152</td>
<td>60.56</td>
<td>17,273</td>
<td>673,664</td>
<td>39/43</td>
<td></td>
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<tr>
<td>14</td>
<td>38.5</td>
<td>The Rolling Stones</td>
<td>3,207,622</td>
<td>158.17</td>
<td>20,279</td>
<td>243,355</td>
<td>12/14</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>35.8</td>
<td>Phish</td>
<td>1,279,400</td>
<td>46.62</td>
<td>27,440</td>
<td>768,334</td>
<td>28/39</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>34.5</td>
<td>Kenny Chesney</td>
<td>415,663</td>
<td>35.76</td>
<td>11,624</td>
<td>964,811</td>
<td>83/83</td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>32.7</td>
<td>Tim McGraw</td>
<td>654,010</td>
<td>52.25</td>
<td>12,516</td>
<td>625,840</td>
<td>50/52</td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>31.8</td>
<td>Justin Timberlake / Christina Aguilera</td>
<td>794,242</td>
<td>61.59</td>
<td>12,895</td>
<td>515,827</td>
<td>40/44</td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>29.3</td>
<td>Jimmy Buffett</td>
<td>1,126,923</td>
<td>52.10</td>
<td>21,630</td>
<td>562,394</td>
<td>26/28</td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>29.1</td>
<td>Pearl Jam</td>
<td>582,500</td>
<td>37.62</td>
<td>15,480</td>
<td>774,012</td>
<td>50/59</td>
<td></td>
</tr>
</tbody>
</table>

*Gross is in millions of U.S. dollars. All figures are for North American dates only. Average tickets and grosses are per city.*
Concert Tour Money Makers Activity

Introduction:

Students are given a list of the highest grossing concert tours. Included is a list of the highest grossing tours of 2003 found at www.pollstaronline.com/2003yearend20.asp. Up to date lists can be found at www.billboard.com by clicking on ‘top concerts’ on the left hand side. Students will use this data to find the mean, median, and range of the total gross of the tour, and to see what happens to the mean, median, and range when some of the data is altered. Students will also work with box and whisker plots and a coordinate graph.

Mathematics Content/ Connection to the Previous Lesson:

Students will use their prior knowledge of mean, median, and range, and how to change the window and scale on their calculator. Students will also be introduced to box and whisker plots.

Connected Mathematics: Samples and Populations

Materials:
TI-73 Calculators
Student Activity Sheets
List of highest grossing concert tours with an even number of tours listed

Time Table: (Based on 40 minute periods)
Day 1: Launch and Explore – Complete Activity Sheet #1
Day 2: Continue to Explore – Complete Activity Sheet #2
Day 3: Continue to Explore – Complete Activity Sheet #3 - Summarize - Homework sheet

General Outline of the Activity:

Launch:
Students are asked if they or their parents or friends have ever seen a concert. It can be noted that most artists make most of their money off their concert tours.

Questions to ask include: How much does a ticket to a concert cost? How much do you think an average concert tour can make? How much can a really good concert tour make?

Also, they are asked to remember what mean, median, and range are, since they will be using it in their activity involving concert tours.

Teachers should orient students to the highest grossing concert tour chart. Questions such as the following should be asked: What does total gross and average gross mean? How many shows did the Eagles play? How can Celine Dion play 145 shows in 1 city and Metalica play 19 shows in 19 cities?

9/29/2004
Explore:
Students should work in pairs to complete this activity so that they can check each other’s progress. However, each student should complete his or her own activity sheet.

See the teacher’s notes for the TI-73 for instructions on how to use the calculator to find the mean and median, how to create box and whisker plots, and how to graph multiple box and whisker plots, or refer to the notes on the calculator hints page.

When making the box and whisker plots, with varying data, the window will vary. Teachers may wish to discuss the appropriate window as a class, or at least check at some point in the class to make sure that students have an appropriate window. Also, the window and scale will change for the box and whisker plot when the fifth value changes in Activity Sheet #2, and make sure that students have changed their window and scale.

When making the box and whisker plots, make sure that all other plots on the students’ calculators are turned off.

Make sure that students answer their questions with complete sentences.

After each worksheet, teachers can choose to get together as a class and go over and discuss answers and findings. However, at the end of the day, make sure that students have the correct values for their mean, median, and range and that students have the correct box and whisker plot.

Make sure that students do not enter the values that their calculator found for the mean, median, range into their list. They should find these values in their home screen.

When making the new plot in Activity Sheet #2, make the second list a function of the first list (make L2 = L1), but just change the fifth value.

Students can use the trace key to trace exact values in their box and whisker plot.

See teacher’s graphing calculator notes on how to create a scatter plot (coordinate graph).

Summarize:
After students have discussed their answers, some questions that teachers can consider asking are:

When entering data into a list, how important is it that you enter your data correctly?

If the numbers weren’t entered in scientific notation, would the mean, median, range, or box and whisker plot be different? How?

How important is it for a musical artist to tour financially?

Is it fair for musical artists to charge so much in ticket prices? Why or why not?

Why do you think artists only travel to big cities?

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Helpful Calculator Hints

**Calculator Hints to find the mean**

a) Press the LIST button, and enter data into L1
b) Press the 2ND button, and then the MODE button to quit and go back to the home screen.
c) Press the 2ND button, and then the LIST button to go to the statistics menu.
d) Press the RIGHT ARROW button until the MATH menu is highlighted.
e) Press the DOWN ARROW button until 3: MEAN ( is highlighted and press ENTER.
f) Press the 2ND button, and then the LIST button to go to the statistics menu.
g) The 1: L1 should be highlighted, so press ENTER.
h) Press the ) button and press ENTER.

**Calculator Hints to find the median**

a) Press the LIST button, and enter data into L1
b) Press the 2ND button, and then the MODE button to quit and go back to the home screen.
c) Press the 2ND button, and then the LIST button to go to the statistics menu.
d) Press the RIGHT ARROW button until the MATH menu is highlighted.
e) Press the DOWN ARROW button until 3: MEDIAN ( is highlighted and press ENTER.
f) Press the 2ND button, and then the LIST button to go to the statistics menu.
g) The 1: L1 should be highlighted, so press ENTER.
h) Press the ) button and press ENTER.

**Calculator hints to create a box and whisker plot**

a) Press 2ND and then the Y= to get to the PLOT menu
b) Press ENTER when the 1: is highlighted
c) Press ENTER when On is flashing
d) Press the DOWN ARROW once and then the RIGHT ARROW until the first box and whisker plot is highlighted and then hit ENTER
e) Press the DOWN ARROW once again and make sure the list that you entered your data into is listed.
f) If the list you entered is not listed, press 2ND and then the LIST button to get the statistics menu. Then press the DOWN ARROW until your list is highlighted. Then press ENTER.
g) Press GRAPH to see your plot. Make sure that your window is set correctly.

** To graph a second box and whisker plot**

a) Press 2ND and then the Y= to get to the PLOT menu
b) Press DOWN ARROW once so that 2: is highlighted and then press ENTER
c) Press ENTER when On is flashing
d) Press the DOWN ARROW once and then the RIGHT ARROW until the first box and whisker plot is highlighted and then hit ENTER
e) See instruction f) in the above hints in order to change the list that will be plotted.
f) Press GRAPH to see your plots.
g) Make sure that your window is set correctly.
Concert Tour Money Makers
Activity Sheet #1

1) What is the average of the total grosses of the concert tours listed? Begin by entering the total grosses into a list into your calculator.

2) Explain how the calculator calculated the average of your data.

3) Is your answer reasonable? Why or why not?

4) Find the median total gross of the tours by using your calculator.

5) Explain how your calculator found the median total gross of the tours.

6) Explain why this number isn't on your list.

7) Using the number line below, mark a point on the line for every value (in millions) of total gross listed on your list.

20              120

9/29/2004
8) Use your calculator to create a box and whisker plot for your data. Be sure to use a window that is appropriate for your data.

9) Sketch your box and whisker plot below.

10) How can you find the range of the data using your box and whisker plot? What is the range?

11) What do you think the three large vertical lines mean?

12) Why is the horizontal line on the right longer than the horizontal line on the left?

13) Compare the line with the dots on page 2 to your box and whisker plot. What do you notice that is similar between the two?

14) What are the advantages of a box and whisker plot and what does it tell you about your data?
Concert Tour Money Makers
Activity Sheet #2

Changing one value

Go back to your original list. Change the fifth total gross to be 682 million U.S dollars.

1) What do you think will happen to the mean? Why?

2) What do you think will happen to the median? Why?

3) What do you think will happen to the range? Why?

4) Record your original mean, median, and range, and find the new mean, median, and range with your calculator.

   original mean   ____________   new mean   ____________
   original median ____________   new median ____________
   original range  ____________   new range  ____________

5) Why did the mean, median, and range change this way?
6) Make a sketch below of both your original box and whisker plot and what you think your new box and whisker plot will look like.

Original box and whisker plot

New box and whisker plot

7) Create your new box and whisker plot using your calculator and view it in the same window as your old box and whisker plot.

8) Sketch your new and old box and whisker plot below

9) What is the same about your old and new box and whisker plot? What is different? What are the causes of these similarities and differences?

10) Johnny's box and whisker plot looks like this:

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|   |   |
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What about your data must change to make your box and whisker plot look like this?
**Change the fifth highest total gross back to the original value**

Maria thinks that if an artist charges a lot of money for tickets, that artist will gross more money in their concert tours.

1) What type of plot would you use to compare the relationship between total gross and average ticket price? Why?

2) Enter the data for average ticket price into a different list than the data for total gross. Use your calculator to create the plot described in question 1.

3) Sketch your plot below.

4) What does the plot tell you about the relationship between total gross and average ticket price? Why?
Match the above box and whisker plots to the corresponding data and explain why.
1) I matched plot a) with data number ___, because

2) I matched plot b) with data number ___, because

3) I matched plot c) with data number ___, because

4) I matched plot d) with data number ___, because

5) I matched plot e) with data number ___, because