

## American Idol

Season twelve of American Idol premiered on January 16<sup>th</sup>, 2013 on FOX. Every year millions of viewers tune in to watch the performances and the reactions of the judges.

Which is more popular, the American Idol Season Premiere or the American Idol Season Finale? How might their viewership look in the future?

Viewers in *millions* of past American Idol season premieres and finales.

Season	Season Premiere	Season Finale
1	9.9	22.8
2	26.5	38.0
3	28.6	28.8
4	33.6	30.3
5	35.5	36.4
6	37.7	30.7
7	33.4	31.7
8	30.4	28.8
9	29.8	24.2
10	26.2	29.3
11	21.9	21.5
12	17.9	

1. The numbers in the chart are in millions. Do you know how to write out those numbers in the standard form, with all of their digits? Try writing out the number that represents the largest viewing audience. What season was this and was it a premiere or a finale?

2. I wonder which event, the finale or the premiere, has been more popular? Which event has historically attracted more viewers? Take a look at the numbers in the table and think of/jot down some ways to determine which event has been more popular.

3. One way to think about which event has been more popular is to look at which event had higher viewership by season. For how many seasons did the premiere viewership outnumber the finale viewership? For how many season did the finale viewership outnumber the premiere viewership?

4. This may not be the most accurate way of comparing the two events. Another way to compare them is to find the **mean**, or average number of viewers for each event. Find the mean number of finale viewers and the mean number of premiere viewers over the past ten years of the show. After you have found the mean of each write a sentence comparing the two means.

5. Another way to compare the two events is to compare their **medians**. Find the median (the middlemost value) of each of the two events. After finding the median of each write a sentence comparing the medians.

6. An interesting way to look at the picture of the medians and outliers is to create a box and whisker plot of the data.

a. Make a box and whisker plot of the season premiers and the season finales. If you need more information on how to create a box whisker plot check out:  
<https://www.khanacademy.org/> or <http://www.purplemath.com/modules/boxwhisk.htm>

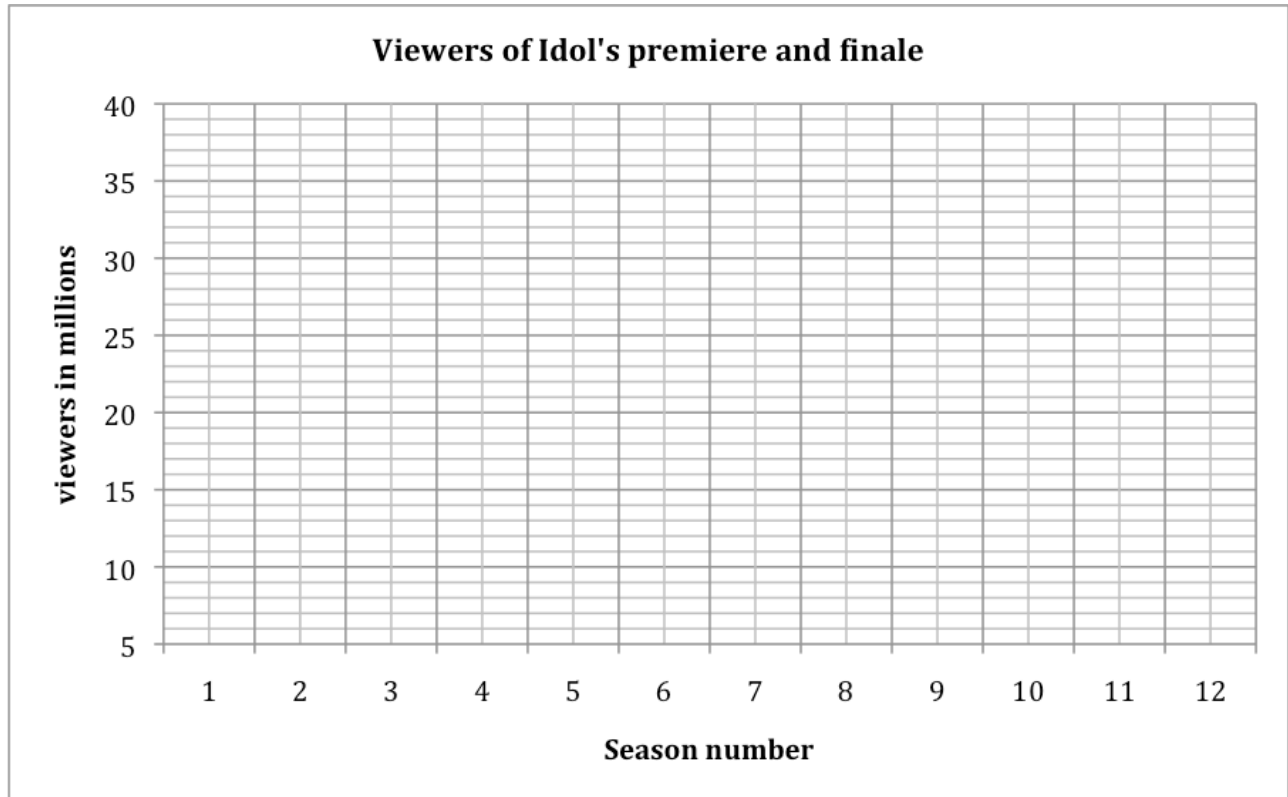
b. What observations can you make by comparing these two plots?

7. I noticed that one of the season premiere viewing totals seems much lower and uncharacteristic of the other viewing totals. This value might be considered an **outlier**, since it differs so much from the rest of the data.

A value is an outlier if its distance from either end of the box is more than 1.5 times the value of the interquartile range (the value or range of the values in the box). The first season only had 9.9 million viewers, which pulls the mean premiere viewership lower. Determine if this value is an outlier.

8. So now that you have studied the viewing totals of the premiere and the finale, which event seems to have higher viewership? Why? Which of your calculations (seasons with more viewers, the mean, the median, or the box plots) seems most useful in making this choice?

9. Plot the viewing total for each event on the grid below. Which event would you expect to have higher viewing totals this season? Using the past data what would you predict this season's viewing totals for each event to be? Plot your predictions for season twelve on the grid.



10. What is happening to the number of viewers of American Idol's premiere? The finale? How are the totals changing over time?

11. Make some viewing predictions for the finale and premiere for the next few years. What did you see in the data that made you make these predictions?

Source: [http://en.wikipedia.org/wiki/American\\_Idol](http://en.wikipedia.org/wiki/American_Idol)