Lab 4D: Interpreting correlations

Directions: Record your responses to the lab questions in the spaces provided.

Some background...

Correlation coefficients

- **Are these variables linearly related? Why or why not?**

Correlation review I

- **Does this plot have a positive or negative correlation?**

Correlation review II

- **Recall that if there is no linear relation between two numerical variables, the correlation coefficient is close to 0. What do you guess the correlation coefficient will be for these two variables?**

The movie data

Calculating Correlation Coefficients!

- **Calculate the correlation coefficient for these variables using the `cor` function. The inputs to the functions work just like the inputs of the `xyplot` function.**

Now answer the following.

- **What was the value of the correlation coefficient you calculated?**

- **How does this actual value compare with the one you estimated previously?**

- **Does this indicate a strong, weak, or moderate association? Why?**

- **How would the scatter plot need to change in order for the correlation to be stronger?**

- **How would it need to change in order for the correlation to be weaker?**

Correlation and Predictions

- **Use the correlation coefficient to determine which variable has a stronger linear relationship with `critics_rating`.**

- **Use the MSE to determine which variable is a better predictor of `critics_rating`.**

- **How are the correlation coefficient and the MSE related?**

On your own

- **Would calculating a correlation coefficient for the two variables be appropriate? Justify your answer.**

- **Predict what value you think the correlation coefficient will be. Compare this value to the actual value. Finally, interpret what the actual correlation coefficient means.**

- **Why do you think these variables are so strongly related? Is using the correlation coefficient to describe the relationship appropriate and why/why not?**