Project: Mathematics Scores

This project is an opportunity to demonstrate your best effort in interpreting and communicating mathematics.

This project is due on Wednesday, November 21. Late projects will be accepted up to one week past the deadline, at a penalty of 1/3 of the credit.

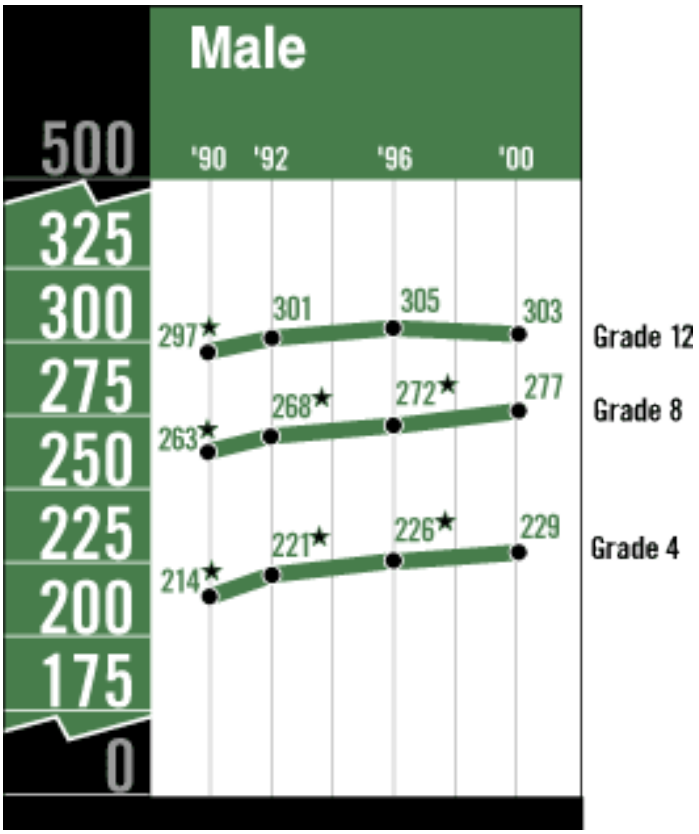
Project Tips:

The best way to organize the work you submit is by restating each project question along with the question number and then answering the question as fully as you can using complete sentences in neat handwriting. You should also include the data in your answers. For some questions, you may want to select and graph certain data points to support your answer.

Academic Integrity Statement:

You are encourage to discuss this project with some of your classmates. Feel free during this time to help each other read the graphs and understand the questions. When it comes to submitting this project for an individual grade, your written answers should be your own. You cannot copy the exact sentences that another student has written as an answer to a question and represent this as your own work.

Average Mathematics Scores for Males: 1990-2000

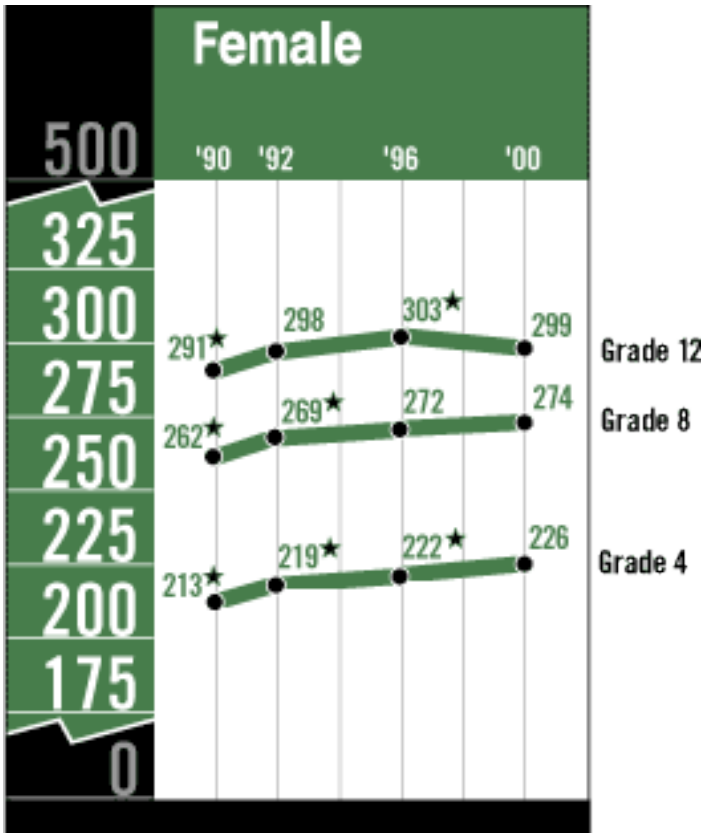


Source: National Center for Education Statistics
http://nces.ed.gov/nationsreportcard/mathematics/results/scalemale-pf.asp

★ *Statistically different from 2000*

The footnote from nces.ed.gov is a reference to a statistical measure and is not relevant to this MAT135 project. You can ignore the footnote.

Average Mathematics Scores for Females: 1990-2000



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Questions about Average Mathematics Scores for Males: 1990-2000

1M. How do the male scores for each grade level in year 2000 compare to those in 1990?

2M. What is the trend for male scores throughout the decade for grade 4 and grade 8?

3M. Over the decade, which grade level had the greatest improvement in male average math scores?

4M. Male students who were in grade 4 in 1992 were tested again in grade 8 in 1996 and again in grade 12 in 2000. Where do you see the greatest improvement for these students?

Questions about **Average Mathematics Scores for Females: 1990-2000**

1F. How do the female scores for each grade level in year 2000 compare to those in 1990?

2F. What is the trend for female scores throughout the decade for grade 4 and grade 8?

3F. How does the change in average score for grade 12 females from 1996 to 2000 compare to the change in scores for males in grade 12 during this same time period?

4F. Over the decade, which grade level had the greatest improvement in female average math scores?

5F. Female students who were in grade 4 in 1992 were tested again in grade 8 in 1996 and again in grade 12 in 2000. Where do you see the greatest improvement for these students?

Questions about both Male and Female Scores:

1MF. For students in grade 12 throughout the decade 1990-2000, which gender made more progress as measured by average mathematics scores?

2MF. Although the data points for grade 4 are connected by straight lines in both graphs, what proof would you offer to justify the following statement: the data for both genders in grade 4 **does not fit** a linear model.

3MF. Does the data for any grade for either gender fit a linear model? (Remember: You are to answer as fully as you can. A simple yes or no is not sufficient.)

Assume you had the following data on both genders averaged together for grade 8.

Grade 8

Year	Average Score
1990	263
2000	275

Since this is a small set of data, you may assume a linear model to answer the question.

1EC. What average score do you predict was achieved by students who were in grade 8 in year 2003? Show all your work.

Year	Average Score
1990	263
2000	275
2003	**???**

Hint: You need to find the linear equation ($y = mx + b$) that fits this data. What is x representing? What is y representing? You need the slope and y-intercept.
If you consider 1990 to be year zero, the equation will be simpler.
Since scores are integers, round the score down to the nearest integer.