Math TODAY™
Student Edition

USA TODAY
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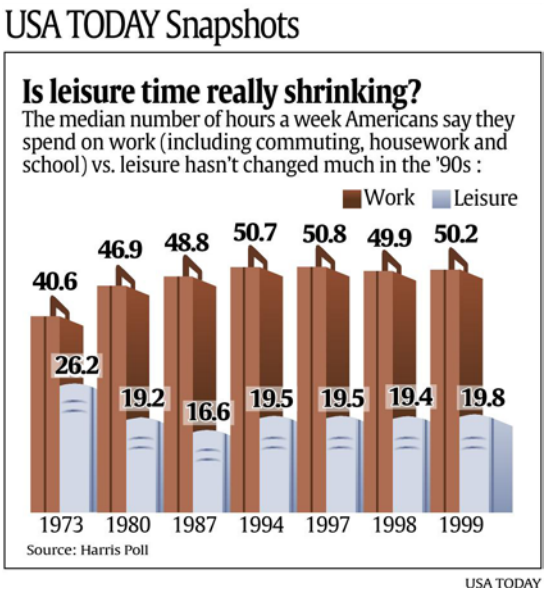
Is leisure time really shrinking?



Activity Overview:

This activity will give you the opportunity to work with a system of equations. In this case, the equations modeling the data from the USA TODAY Snapshot "Is leisure time really shrinking?" will be quadratic. You will study the graphs and determine if they intersect, and if so, you will find the intersection point. You will practice analyzing data and explaining any trends in the data. Finally, you will examine a predicted value from the model and compare it to the actual value listed by determining the percent error between the two values.

Focus Questions:

- Describe the trend in the difference between work and leisure time for the time period shown in the USA TODAY Snapshot.
- Will there be a time when Americans spend equal amounts of time on leisure and work? If so, predict when this will happen.
- Using the mathematical model, predict the year when the most time was spent on work and determine the percent error in the prediction compared to the value listed in the USA TODAY Snapshot for that year.

This activity was created for use with Texas Instruments handheld technology.

Is leisure time really shrinking?

Assessment and Evaluation:

Describe the trend in the difference between work and leisure time for the time period shown in the USA TODAY Snapshot "Is leisure time really shrinking?".

- Enter the data from USA TODAY Snapshot in three lists.
- Use the arrow key to move to the top of L4,so that L4 is highlighted. Enter L2 - L3 and then press [ENTER].
- Look at the entries in L4 and describe the trend in the difference between work and leisure time for the year from 1973 through 1999.

_____

_____

Will there be a time when Americans spend equal amounts of time on leisure and work? If so, predict when this will happen.

Step 1:

- Create two scatter plots; one for time spent on work vs. year and another for time spent on leisure vs. year.
- Use the capabilities of the calculator to determine the regression model for the two scatter plots.
  Model for work vs. year_____
  Model for leisure vs. year _____

Step 2:

- Press [WINDOW] make adjustments to the window setting so you can see the intersection of the two models.
- Determine the intersection of the graphs of the models.
- Record the year when Americans will spend equal amounts of time on leisure and work _____

Using the mathematical model, predict the year when the most time was spent on work and determine the percent error in the prediction compared to the value listed in the USA TODAY Snapshot for that year.

Step 1:

- Press [2nd] [CALC] and choose 4:maximum, be sure the cursor is on the correct model.
- Use the arrow keys to move the cursor so that it is to the left of the maximum value and press [ENTER].
- Move the cursor to the right side of the maximum value and press [ENTER].
- Press [ENTER] again and you will have the answer to the question. Record your answers below.
  Year when the most time was spent on work_____
  Most time spent on work_____

Step 2:

- Use the USA TODAY Snapshot and locate the year found in Step 5. Determine the percent error between the value listed for time spent on work and the prediction from your model.
  Percent error_____

Data Source:

Harris Poll

Materials:

- TI-83 Plus family or TI-84 Plus family