TI-nspire™

Grade level: 9-12
Subject: mathematics
Time required: 90 minutes

CSI – How Tall Were the Victims?

by – Jamie Chaikin

Activity overview

In this activity, students will play the role of crime scene investigator. The remains of two individuals have recently been found trapped in a fisherman's net off the coast. A large portion of the individuals is missing, except for their feet, which remain completely intact. The students will help identify the individuals by determining how tall each of them was based solely on the length of their feet.
Students will use this line of best fit activity based on class data to predict the size of the male and female victims. Students will also analyze the graph to determine the meaning of outliers as related to their class data Students will create their own line of best fit and answer analysis questions prior to entering the class data into the TI-Nspire.

Concepts

- *Line of Best Fit*
- *Outliers*
- *Predictions*

Teacher preparation

Teachers need to have the following materials available:

- *Metric Tape measure*
- *Masking tape*
- *8 ½" by 14" paper*

Classroom management tips

- *This should be a student run activity. The tallest student can be in charge of measuring the height of each student. Another student should be in charge of gathering the data to put in a table on the board. Students can then work in pairs for comparing their results as they enter the data, determine the window settings to view the data, and finally generate the line of best fit.*
- *The student worksheet ("CSI how tall are the victims.doc) is intended to guide students through the activity and serve as a place for students to record and verify their answers.*

TI-Nspire Applications

Notes, Lists, Statistics, Calculator

Create the Scatter Plot and actual line of Best Fit

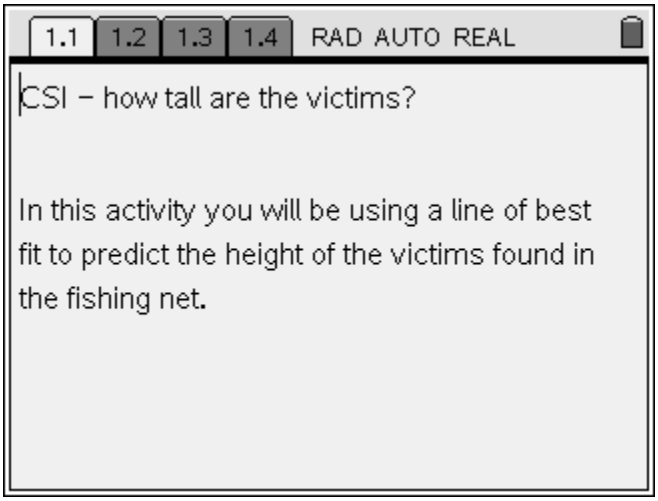
In this activity, you will explore:

How to use Line of Best Fit to Predict the height of a person based on their foot size.

1. Press the (home) , 7 My Documents. In your Period folder, open the file "CSI- how tall are the victims".

Use this document as a reference and to record your answers.

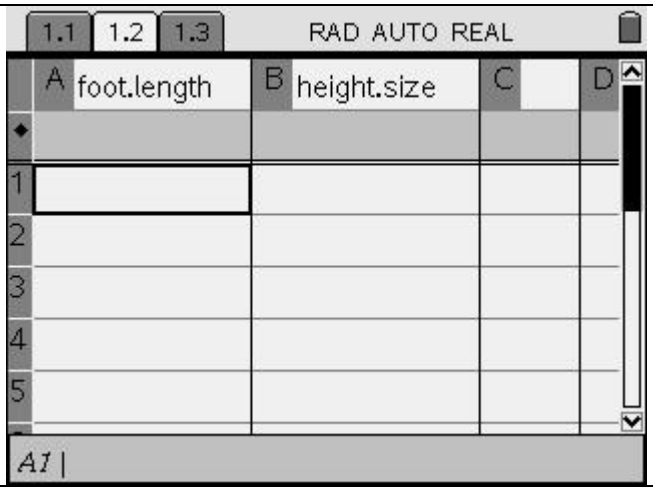
Press (ctrl)▶ to go to page 1.2.



2. Enter the data for your class into the table. Make sure you put the data in the proper columns based on the labels.

3. Save your data at this point - Press (ctrl)(home) 1:File 3:Save

Press (ctrl)▶ to go to page 1.3.



4. Now you will look at the graph of your data.

5. Set up the window so you can see your data.

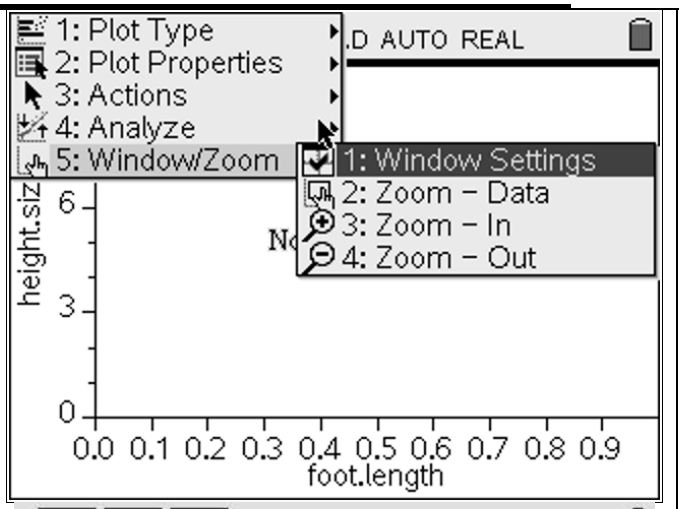
6. Enter (menu), 5: Window/Zoom, 1: Window Settings. Use (tab) to move between the values.

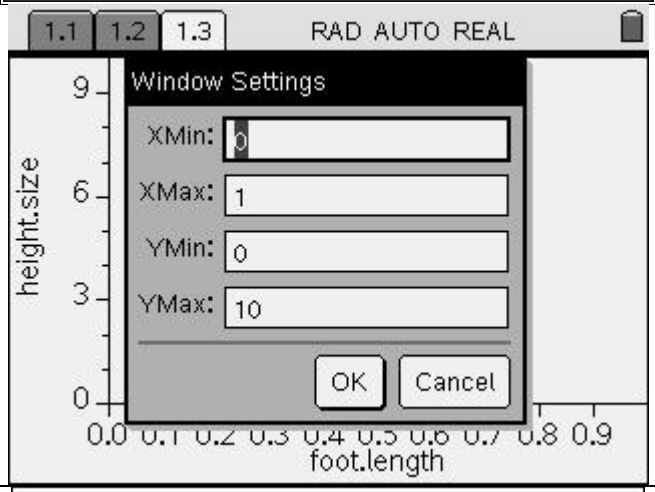
☺ Xmin is the smallest value on the *x*−axis for your class's foot length.

☺ Xmax is the largest value on the *x*− axis for your class's foot length.

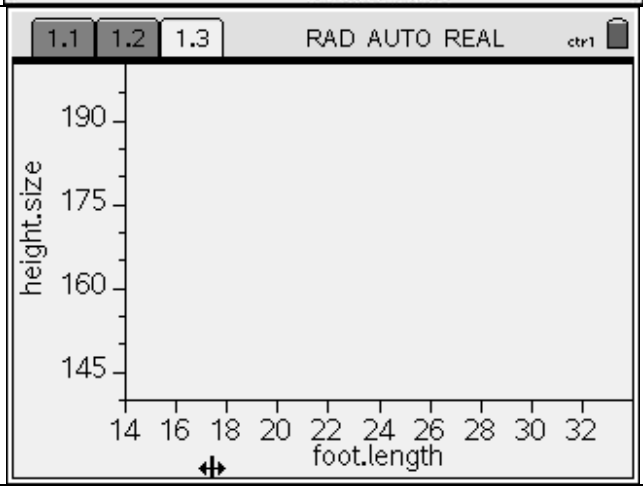
☺ Ymin is the smallest value on the *y*− axis for your class's height.

☺ Ymax is the largest value on the *y*− axis for your class's height.



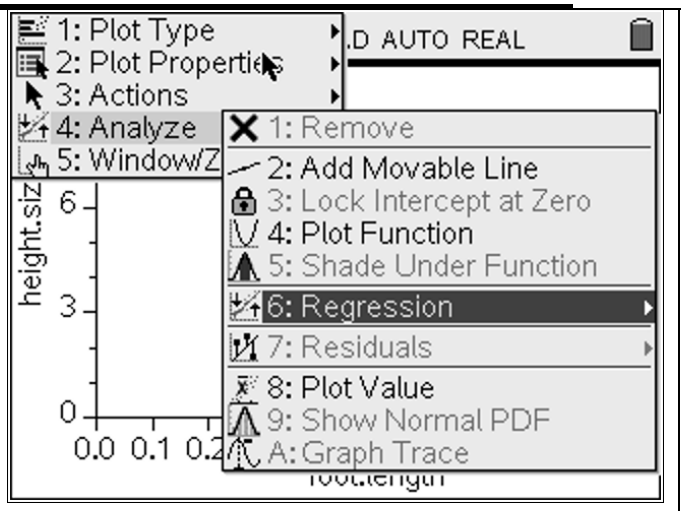


Sketch your data on the screen on the right.



Find the line of best fit.

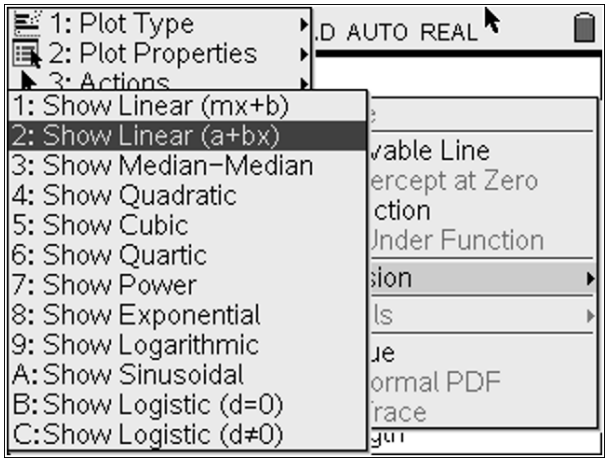
7. Press the (menu) , 4: Analyze, 6: Regression, 2: Show Linear (a+bx) and press (enter).



8. Write down the equation for the line of best fit:

$y =$ _____ + _____ x

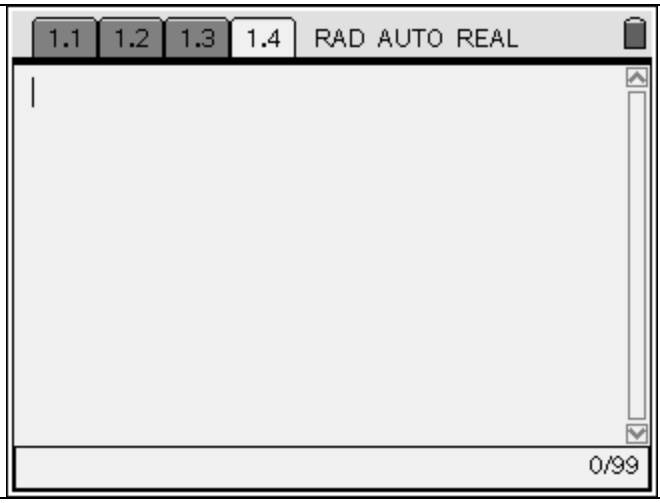
9. Save your data at this point - Press (ctrl)(home) 1:File 3:Save



10. Press (ctrl)▶ to go to page 1.4.
11. Use the equation to find the body height of each victim. Use the best fit equation and substitute for x.

John Doe $y =$ _____ + _____ _____
John Doe's height=
Jane Doe $y =$ _____ + _____ _____
Jane Doe's height=

12. Type your substitution into the screen and



calculate the "exact answers" and enter your calculations into the table:

Predictions using equations		
Victim	Foot Length (cm)	Body Height (cm)
John Doe	26.3	
Jane Doe	23.9	

Close your document at this point.

Press the ⌂, 6, Enter (for yes)

This will prevent other classes from overwriting your file.

Assessment and evaluation

- *Analysis Questions are included in the student worksheet " CSI-How Tall Were the Victims.doc"*

Student TI-Nspire Document

CSI – how tall are the victims.tns