



HOW TALL IS TALL?

Making Data Fit

Middle School Students Needs

Karen Cockburn, EdD

Kcockburn@cvsd.org

March 15, 2002

T3 Conference
Session 010
Calgary, BC

EXAMPLES OF DATA TO GATHER AND ANALYZE

1. Measurements of body parts (Selectively of course, arms, feet, neck, wrist, height)
2. Hours of TV watched per week
3. Hours spent on homework per week
4. Length and weight at birth
5. Length at birth with current height
6. Size and price of Pizza
7. Heart rate at the beginning of class
8. Heart rate at the middle or end of class
9. Heart rate before a test or quiz
10. Score in percent or points earned on test compared to homework score
11. Amount of change in your pockets
12. Hours of sleep per week
13. Amount of soda pop consumed in a week
14. Number of movies viewed in a month
15. Number of hours worked per week compared to GPA that semester
16. Height with length of foot in centimeters

QUESTIONS THAT APPEAR FROM GATHERED DATA

1. Am I normal? What does "normal" mean?
2. Who has the smallest, largest, wrist in the class?
3. What is the most "common" wrist size in this class?
4. What is the range of measurements for the heights of this class?
5. Are there any outliers?
6. Does the teacher's height belong in this data set?
7. Does the teacher's wrist measurement belong in the data set?
8. Can you predict a person's height given their wrist measurement?
9. When would the mode be more meaningful than the mean?
10. Were the measurements randomly gathered?
11. If you have a mixed group of 6th graders, 7th graders, and 8th graders would your average height be meaningful?
12. When would knowing the average be useful information?
13. Is being average always your goal?
14. When would being an outlier be better than being average?
15. If Robert Wadlow was in your class what would happen to the average of the class height?



We have been researching the life of Robert Wadlow. Now we are working together to build a model of the man.



<http://www.onekama.k12.mi.us/onek2k/g3/wadlow.h>

tm



ROBERT WADLOW DATA

AGE	HEIGHT	AGE	HEIGHT
5	5' 4"	15	7' 8"
8	6' 0"	16	7' 10.5"
9	6' 2.5"	17	8' 0.5"
10	6' 5"	18	8' 3.5"

11	6' 7"	19	8' 5.5"
12	6' 10.5"	20	8' 6.75"
13	7' 1.75"	21	8' 8.25"
14	7' 5"	22	8' 11.1"

Can There Be Giants?

1. Enter Robert Wadlow's age in L_1 and his height in L_2 .
2. Go to STAT PLOT to create a Scatterplot of the data. Turn on Plot 1, Scatterplot, L_1 , L_2 .
3. Be sure to select an appropriate viewing WINDOW. Try [1,25,10] by [50,120,10].
4. Does it appear linear?
5. Use STAT, CALC, LinReg
6. Enter L_1 comma, L_2 comma, VARS, Y-VARS, Function, enter Y1. The calculator will then find the Least Square Regression line, enter it into Y1, and make it active.
7. Look at the Plot again. Is it a good fit?
8. Can you predict a height given a specific age?
9. How tall does our model say he was at age 7?
10. Is it appropriate to use our model to predict his height at age 25?



A nice lead into this activity is the video [The Story of Robert Wadlow](#).

<http://www.altonweb.com/museum/giftshop.htm> offers this video for sale. You can print an order sheet from this site and mail to purchase books, etc.

Websites for more information and pictures:

<http://www.altonweb.com/history/wadlow/> Robert Pershing Wadlow

<http://www.roadsideamerica.com/attract/ILALTwadlow.html> Wadlow Statue

<http://www.mcleansboro.com/features/tallman.htm> History Fair Project

Data Storage Program

HEIGHT

{154,158,162,163,164,166,167,168,170,170,171,171,175,
175,178,181,182,183,183,183,187,190} →_LHEIGHT

{16,17,15,18,16,15,18,18.5,16,17.5,17.5,15,16.5,16.

5,18.5,14,16,16,15,15,15,14.5} → _LWRIST

SetUpEditor _LHEIGHT, _LWRIST

Plot1(Histogram, _LHEIGHT)

Plot2(Histogram, _LWRIST)

Plot3(Boxplot, _LWRIST)

PlotsOff

Storing data in a program can provide significant advantages. As detailed in the article [Efficient Storing Of Statistical Data In The TI-82 and TI-83 For AP Statistics](#), written by Albert Coons

Buckingham Browne & Nichols School
Cambridge, MA 02138
(617) 547-6100 X 264
alcoons@aol.com

In case you are unable to just click on the about title the address for this article can be found at

http://www.bbns.org/us/math/ap_stats/papers_folder/articles_folder/storing_data_on_TI_83_folder/storing_data_on_TI83.html.

Mr. Coons lists some of the advantages for this method:

- The only lists which appear in the Statistics List Editor are those for the particular activity.
- Data sets which each contain a list with the same name can be maintained in the calculator without changing names.
- Data can be reconstructed (without reloading from either a computer or another TI calculator) when data is altered either by mistake or through exploration.
- The data usually uses less TI-83 memory when stored in programs than when stored lists.

Selected Bibliography

Algebra, Data, and Probability Explorations for Middle School, A Graphics Calculator Approach. Jones, Graham and Roger Day. Dale Seymour Publications, 1998. ISBN 1-57232-269-1-21807.

Data Collection Activities for the Middle Grades with the TI-73, CBL, and CBR. Johnston, Ellen C. and David A. Young. Texas **TI-82 Graphing Calculator Activities for Middle School Math.** Lund, Charles. MathWare, 1994. ISBN 0-9623629-6-4.

Exploring Linear Relations. Burrill, Gail F and Patrick Hopfensperger. Dale Seymour Publications, 1998. ISBN 1-57232-210-X21161. Instruments, 1998. ISBN 1-886309-23-X.

Graphing Calculator Activities for Enriching Middle School Mathematics. Browning, Christine A. and Dwayne E. Channell. Texas Instruments, 1997. ISBN 1-886309-15-9.

Modeling Motion: High School Math Activities with the CBR. Antinone, Linda, Sam Gough, and Jill Gough. Texas Instruments, 1997. ISBN 1-886309-14-0.

Probability Through Data. Hopfensperger, P, H. Kranendonk, and R. Scheaffer. Dale Seymour Publications, 1999. ISBN 1-57232-225-X-21170.

Real-World Math with the CBL System: Activities for the TI-83 and TI-83 Plus. Brueningsen, Chris, Bill Bower, Linda Antinone, and Elisa Brueningsen-Kerner. Texas Instruments, 1999. ISBN 1-886309-28-0.

Websites

<http://www.education.ti.com/>

There are more teacher resources here than I will ever be able to use.

<http://mathforum.org/ruth/>

Ruth Carver's website will link you to hundreds of sources. I found if it ain't there, I don't need it!

http://www.bbns.org/us/math/ap_stats/

Al Coon's school site has information specifically for AP Stats teachers but there are also good ideas for all teachers using statistics in their lessons.