

This is in your packet **REGRESSION LINE WKSHT # 1**

FEMALE	HEIGHT INCHES	62	63	64	64	65	65	66	66	67	68
	SHOE SIZE	7	9	6.5	8	7.5	8	6.5	9	8	9

L1
L2

MALE	HEIGHT INCHES	67	69	71	71	71	71	72	72	73	74	76
	SHOE SIZE	7.5	9.5	9	10	10	11	10	11	9.5	11.5	13

L3
L4

We already entered this data yesterday

The tables above give the height and shoe size of some adults. Let x represent height, in inches, let y represent shoe size.

Load the FEMALE data into L1 (x) and L2 (y). Load the MALE data into L3 (x) and L4 (y). Remember STAT1:EDIT, be sure to press enter after each entry.

2nd MODE will get you out of the list screen.

~~Turning Diagnostics ON!!! This important for finding the CORRELATION COEFFICIENT "r" You should only need to do this one time.~~

~~Press 2nd 0, then arrow down until you get to DiagnosticOn. Press ENTER twice, your calculator should say Done.~~

Graphing the scatter plot (all those points you just entered into L1-L4)

Press 2nd Y= ENTER this will open your STAT PLOT Menu. Open STAT Plot 1 by pressing the arrow key until the cursor is blinking over the word ON, press ENTER. Arrow DOWN press enter on the first type of graph. Arrow DOWN again XList : L1, YList: L2 when you get down to MARK, choose the one that looks like a square doughnut.

2nd MODE will get you out of this screen.

Press 2nd Y= this time go down to the 2nd STAT PLOT turn it on, use the first graph, X List: L3(you will find L3 in 2nd 3) , Y List: L4 (this will be the male data) make the MARK +

WAIT ON THIS!

2nd MODE

Press ZOOM :9 This is zoom stat. The calculator will automatically choose a viewing window so that you can see the data. It may not be perfect, but we will deal with that FRIDAY.

You should be now looking at the STAT PLOT graphs for the Female (square donut) and Male + data sets.

Now, lets find a regression line for each set of data. This will be a line that is as close as possible to each ordered pair

Let's start with the regression line for the female data: There will be two sets of directions, one for those of you with a new calculator and one for old calculators.

OLDER Calculators TI83, 83+, and 84 older than 2011
 Press CLEAR then STAT arrow over to CALC:4 LinReg(ax+b)
 Press ENTER
 You should see :

NEWER Calculator 84 Silver Edition (2011+)
 Press CLEAR then STAT arrow over to CALC 4: linReg (ax+b)
 XLIST: L1
 YLIST:L2
 Arrow down to StoreRegEQ: press VARS, YVARS press enter twice. Move down to Calculate ENTER You should see:

OVER



OLD CALCULATORS

$y=ax+b$
 $a=.1666666etc$
 $b=-2.983333$
 $r^2=.0977517$
 $r=.3126526997$

Using the a and the b above write the equation of the regression line rounding to 4 places after the decimal.
 $y=ax+b$: Female regression line:

$y=0.1667x-2.9833$

now press Y=
 then VARS: 5 STATISTICS arrow over to EQ press enter. The regression line should now be in your Y1=

Now let's do the same thing for the Male data:

2nd MODE CLEAR
 STAT arrow over to CALC:4 LinReg(ax+b) ENTER
 LinReg(ax+b) should show on your calculator, now press 2nd 3 comma (located above the 7) 2nd 4 ENTER

This should put L3,L4 after LinReg(ax+b) this tell the calculator that the x list is in L3 and the Y list is in L4

Fill in the following round to 4 places after the decimal:

$y=ax+b$
 $a=0.5184$

$b=-26.9094$

$r=.8595$

$y=0.5184-26.9095$

write the male regression eqn: _____

New Calculators

$y=ax+b$
 $a=.1666666etc$
 $b=-2.983333$
 $r^2=.0977517$
 $r=.3126526997$

Using the a and the b above write the equation of the regression line rounding to 4 places after the decimal.
 $y=ax+b$: Female regression line:

Now press CLEAR then STAT arrow over to CALC:4: LinReg

XLIST:L3
 YLIST:L4
 Arrow down to StoreRegEQ: press VARS, YVARS arrow down to Y2 press enter twice. Move down to Calculate ENTER

This should put L3,L4 after LinReg(ax+b) this tell the calculator that the x list is in L3 and the Y list is in L4

Fill in the following round to 4 places after the decimal:

$y=ax+b$
 $a=$ _____

$b=$ _____

$r=$ _____

write the male regression eqn: _____

$\begin{matrix} \times 12 \\ 60'' \\ + 6'' \\ \hline 66'' \end{matrix}$
 1. Use the regression line to predict what size shoe a woman who is 5'1" would wear. Convert 5'1" into inches, it is an x value, so plug it in and find the y-value. (show work here)

$y = 0.1667x - 2.9833$
 $y = 0.1667(66) - 2.9833$
 $y = 7.1854$

Shoe size 7

2. Use the regression line to predict by hand how tall a man should be who wears a size 12 shoe. Is shoe size x or y? Plug it into the appropriate eqn, show work here:

$y = 0.5184x - 26.9095$
 $12 = 0.5184x - 26.9095$
 $38.9095 = 0.5184x$
 $x = 75.05690586 \approx 75''$
 Height in feet and inches 6'3"

$75 \div 12 = 6'$