May 16th

Due Today: HW 12.4

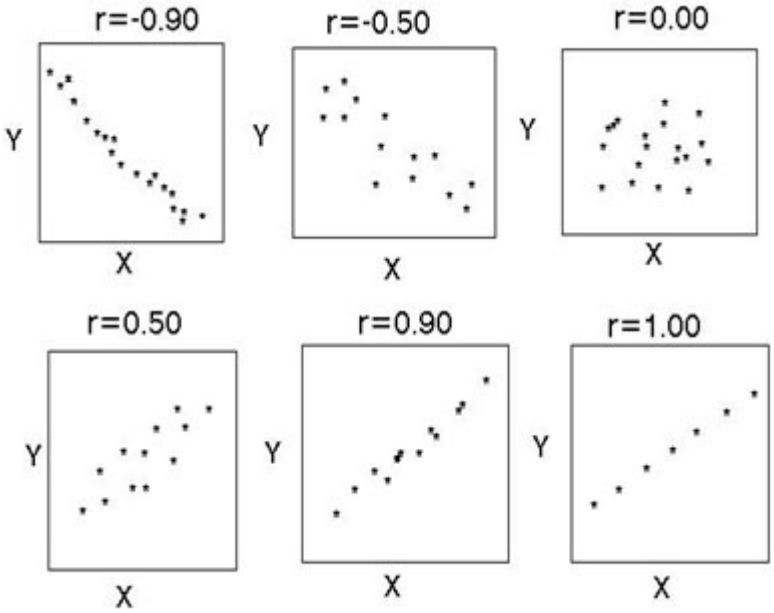
Due Next: HW 12.5

Unit 12: Data Analysis

Lesson 12.5: Data Analysis with a Calculator

GET A CALCULATOR

Look at the graphs to the right, examine the r values. Given these examples, write what you think r means.



I will always label and title my graphs.

10 times

Graphing in your Calculator

Age	Allowance
5	1
8	5
17	25
12	10
9	10
11	5
15	20

1. Go to STAT and EDIT
2. Highlight L1 hit clear and enter
3. Highlight L2, hit clear and enter
4. Enter the AGE data into L1
5. Enter the ALLOWANCE data into L2
6. Go to STAT PLOT (second y=)
7. Click Plot 1 ON
8. For Type choose the little scatter plot
9. Go to ZOOM and Choose 9-ZoomStat
10. Press Graph- OOHHHH AHHHHH.

REGRESSION

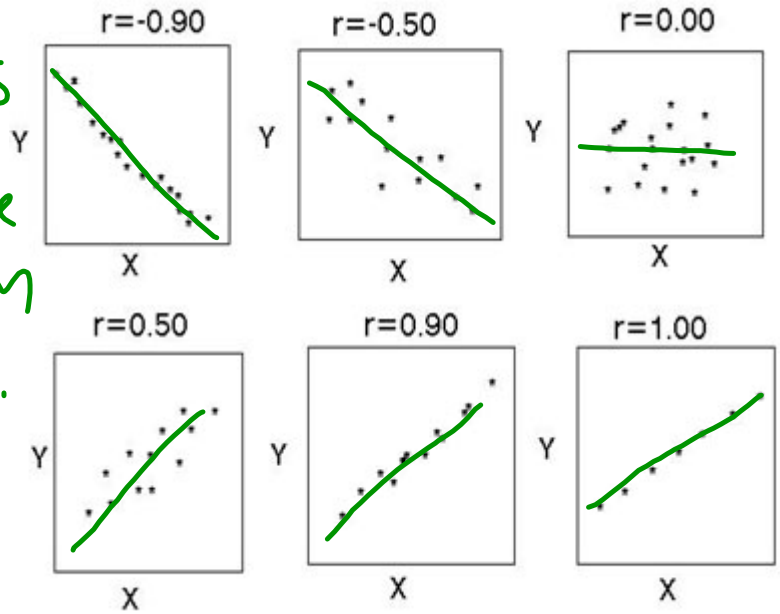
FINDING THE EQUATION THAT BEST FITS THE DATA

- linear, quadratic, exponential, etc...

r = the correlation coefficient

- always between -1 and 1. the closest to -1 or 1: the better the regression

if $r \geq .5$ then the regression is good.



Find the equation of a linear model of the data using LINEAR REGRESSION

1. Do all the steps to graph the data
2. Go to CATALOG (2nd 0) and go to DIAGNOSTICS ON and hit enter
3. go to STAT - CALC
4. LingReg(Ax +B)
5. Copy down the values

Allowance = 1.95 (age) + -10.6
Correlation Coefficient: r = 0.93

6. Enter the equation into y1
7. graph again

Using the model to predict data

Linear Regression Equation: $y = 1.95x - 10.6$

Use the regression equation to predict how much allowance a 14 year old would receive.

$y = 1.95(14) - 10.6$

$\approx \$16.70$

Use the regression equation to determine the approximate age of a kid who gets $15 a week for their allowance.

$15 = 1.95x - 10.6$

approx 13 years old

What if our data isn't linear...

An application developer released a new app to be downloaded. The table below gives the number of downloads for the first four weeks after the launch of the app.

Number of Weeks	1	2	3	4
Number of Downloads	120	180	270	405

Write an exponential equation that models these data. Use this model to predict how many downloads the developer would expect in the 26th week if this trend continues. Round your answer to the nearest download. Would it be reasonable to use this model to predict the number of downloads past one year? Explain your reasoning.

$y = 80 \cdot 1.5^x$

$= 80 \cdot 1.5^{26}$

$= 3030{,}140$

1. Enter data into L1 and L2
2. check out the graph
3. run an exponential regression (STAT- EXPREG)
4. y = _____
5. enter the equation into y1
6. graph.

What about univaraite data?

Mr. Suppe recorded the height, in inches, of each student in his class. The results are recorded in the table below.

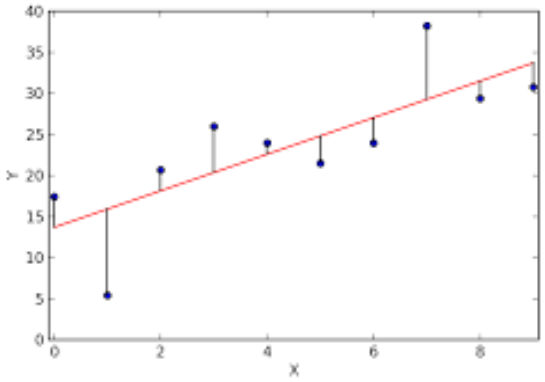
60	59	70	65	64
61	58	72	75	66
65	67	63	62	68
68	69	74	61	70

$\overline{x}$ = Mean

1. Clear everything in L1 and L2
2. Enter the height data into L1
3. Go to STAT- CALC and choose 1-var Stats and ENTER
4. x = MEAN = 65.85

min= 58
q1= 61.5
med= 65.5
q3= 69.5
max= 75

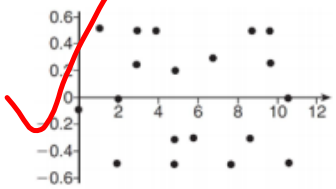
Residuals: the differences between the predicted values and the actual values:



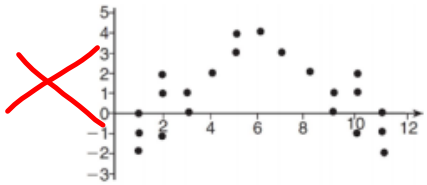
The sum of the residuals should be very close to zero.

The plot of the residuals should be RANDOM.

The residual plots from two different sets of bivariate data are graphed below.



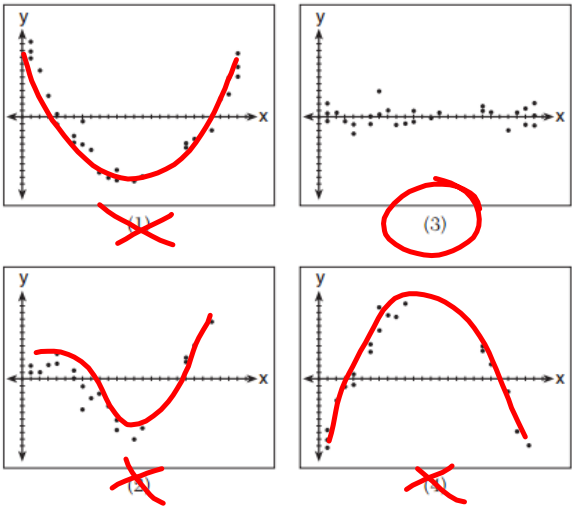
Graph A



Graph B

Explain, using evidence from graph *A* and graph *B*, which graph indicates that the model for the data is a good fit.

24 After performing analyses on a set of data, Jackie examined the scatter plot of the residual values for each analysis. Which scatter plot indicates the best linear fit for the data?



Unit 12: Data Analysis

Lesson #	Name	Recap	HW
12.1 -3	Data VIdeos and Packet		Videos + Packet
12.4	Quiz		HW 12.4
12.5	Graphing with Calculator		hw 12.5