DO NOW

Theater ticket sales on successive nights

Patrons (p)	Revenue (R)
32	480
33	495
40	600
81	1215

a) Write a linear regression equation for the data (Round to the nearest hundredths)

$y = 15x$

b) Use the linear model to predict revenue if 121 patrons attend.

$y = 15(121)$

$y = \$1815$

May 18-11:38 AM

Homework Answers

1(a) Quadratic 1(b) Exponential 1(c) Quadratic

1(d) Linear 1(e) Exponential 1(f) Linear

2) 3 The quadratic is opening downward so it needs a negative "a" value.

3(a) Quadratic - data appears to be in a straight line

3(b) Linear Model y = 10.83x + 114.07

Exponential Model $y = 121.09(1.06)^x$

3(c) Linear = 222.37 Exponential = 216.85

Linear about 6 more website hits

3(d) Linear = 438.97 Exponential = 695.48

Exponential about 256 more website hits

3(e) Exponential as it goes up by a constant rate not a constant amount

May 24-6:49 AM

Quantifying Predictability

Predicting the correlation between two variables

Correlation Coefficient

-r-value

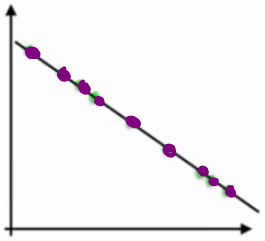
If r = 0: there is almost no correlation/predictive ability

If r = 1 or r = -1: perfect correlation/ predictive ability

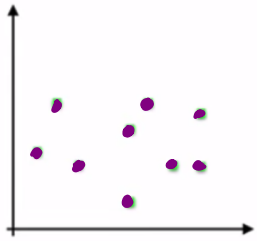
Calculator Instructions

-Turning on Diagnostics

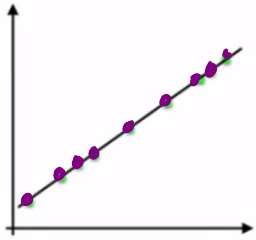
- Mode
- ⬇
- STATDIAGNOSTICS: OFF ON



Perfect Negative Fit: r=-1



No Correlation: r=0



Perfect Positive Fit: r=1

May 22-5:13 PM

Exercise # 1: For each, enter the data into your calculator, observe the scaer plot, and record the correlaon coefficient, for a linear fit to the nearest thousandths.

(a)

x	2	5	8	11	15	18
y	4	13	22	29	43	52

r = .999

Strong positive

(b)

x	2	5	8	11	15	18
y	16	14	22	41	37	51

r = .930

(c)

x	2	5	8	11	15	18
y	18	8	41	28	62	44

r = .777

weak positive correlation

(d)

x	2	5	8	11	15	18
y	44	51	30	55	45	47

r = .133

no correlation

(e)

x	2	5	8	11	15	18
y	52	47	28	32	25	10

r = -.945

Strong negative

May 22-5:34 PM

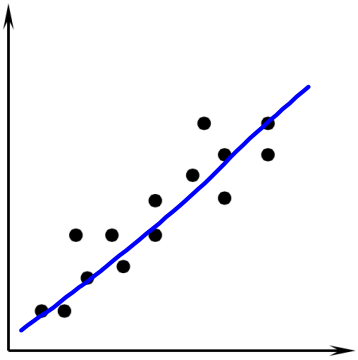
Exercise # 2: Given the scaer plot shown below, which of the r-values would most likely represent the correlaon between the two variables? Explain your choice.

(a) r = 0.88

(b) r = 0.28

(c) r = 1 → perfect

(d) r = -0.94



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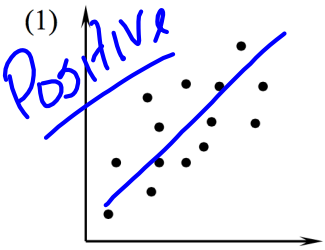
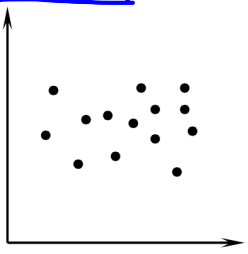
Exercise #3: Which of the following scaer plots would have a correlaon coefficient closest to -1?

r = -1

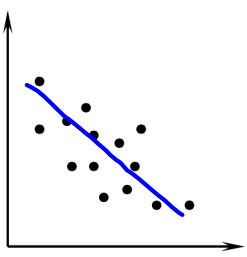
(1) positive



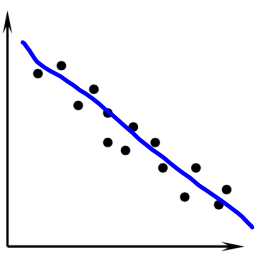
(3)



(2)



(4)



May 22-5:50 PM

Exercise #4: There are two primary types of crude oil sold in the world, West Texas Intermediate (WTI) and Brent Crude. Each is priced differently on a daily basis and each has a correlaon with the average price per gallon for unleaded gasoline. The two linear regression models, along with their r-values, are shown below. Give a predicon for the price per gallon of unleaded gasoline, y, on a day when the price for WTI is $103 and the price for Brent is $109, x. Which model did you choose and why?

Brent Crude: y = 0.028x + 0.71, r = 0.973

Better model larger r-value

WTI Crude: y = 0.031x + 0.67, r = 0.924

$3.76

$y = 0.028x + 0.71$

$y = 0.028(109) + 0.71$

$y = 3.762$

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