

Tuesday, October 4, 2016

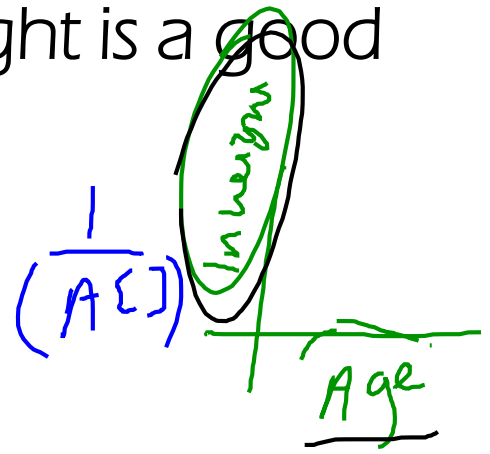
C] $\ln \text{Age}$
= $\ln(A[i])$

D] $\ln \text{Height}$
= $\ln(B[i])$

A] Age (yr)	B] Height (cm)
1	73.6
2	83.8
3	91.4
4	99.0
5	104.1
6	111.7
7	119.3
8	127.0
9	132.0
10	137.1
11	142.2
12	147.3
13	152.4
14	157.5

• Warm-up

- Enter the given data into your calculator $\ln(\text{height}) =$
- Determine if Age vs. Height is a good linear model
 - Explain why or why not



• Check Homework

• Review Questions

Display 3.104 Heights and weights of children.





Objectives

- **Content:** I will review material from units 7-10 in preparation for the upcoming test.
- **Social:** I will show respect to others in the class by listening and not interrupting.
- **Language:** I will write clear notes that I can use to study from.

Previous Assignments Questions

$$2g = \mathbb{R}^2$$

A

FRAPPY

1. A simple random sample of 9 students was selected from a large university. Each of these students reported the number of hours he or she had allocated to studying and the number of hours allocated to work each week. A least squares linear regression was performed and part of the resulting computer output is shown below.

Predictor	Coef	StDev	T	P
Constant	8.107	2.731	2.97	0.021
Work	0.4919	0.1950	2.52	0.040
S = 4.349 R-Sq = 47.6% R-Sq (adj) = 40.1%				

The scatterplot below displays the data that were collected from the 9 students.



- (a) After point P, labeled on the graph on the previous page, was removed from the data, a second linear regression was performed and the computer output is shown below.

Predictor	Coef	StDev	T	P
Constant	11.123	3.986	2.79	0.032
Work	0.1500	0.3834	0.39	0.709
S = 4.327 R-Sq = 2.5% R-Sq (adj) = 0.0%				

Does point P exercise a large influence on the regression line? Explain.

More with the FRAPPY

Predictor	Coef	StDev	T	P
Constant	8.107	2.731	2.97	0.021
Work	0.4919	0.1950	2.52	0.040
S = 4.349		R-Sq = 47.6%		R-Sq (adj) = 40.1%

- Write the equation of the regression line:

$$\text{Study} = 8.107 + 0.4919 \text{ work}$$

- Explain (in context) what the slope means.

For every 1 hour increase in work, we predict a 0.4919 hour increase in study.

- Explain (in context) what the y-intercept means.

When work hours = 0 we predict study = 8.107

- Explain/interpret R^2 in context.

47.6% of the variation in study hours can be predicted by the linear relationship with work hours

- Calculate the correlation coefficient - what does it tell you?

$\sqrt{0.476} = 0.69 \rightarrow$ The linear relationship between study and work hours is moderate and positive.

- What does a positive residual indicate?

Study hours higher than predicted.



Reminder - rules about correlation...

$$r = \underline{0.69}$$

- If I were to switch the previous relationship to study on the x-axis and work on the y-axis, what would happen to correlation? *nothing*
- If I were to change the units on study to minutes, what would happen to correlation? *nothing*
- What are other restrictions on correlation?
 - Units? *none*
 - Limits of values? *-1 to +1*
 - Limits on data types?
Quantitative

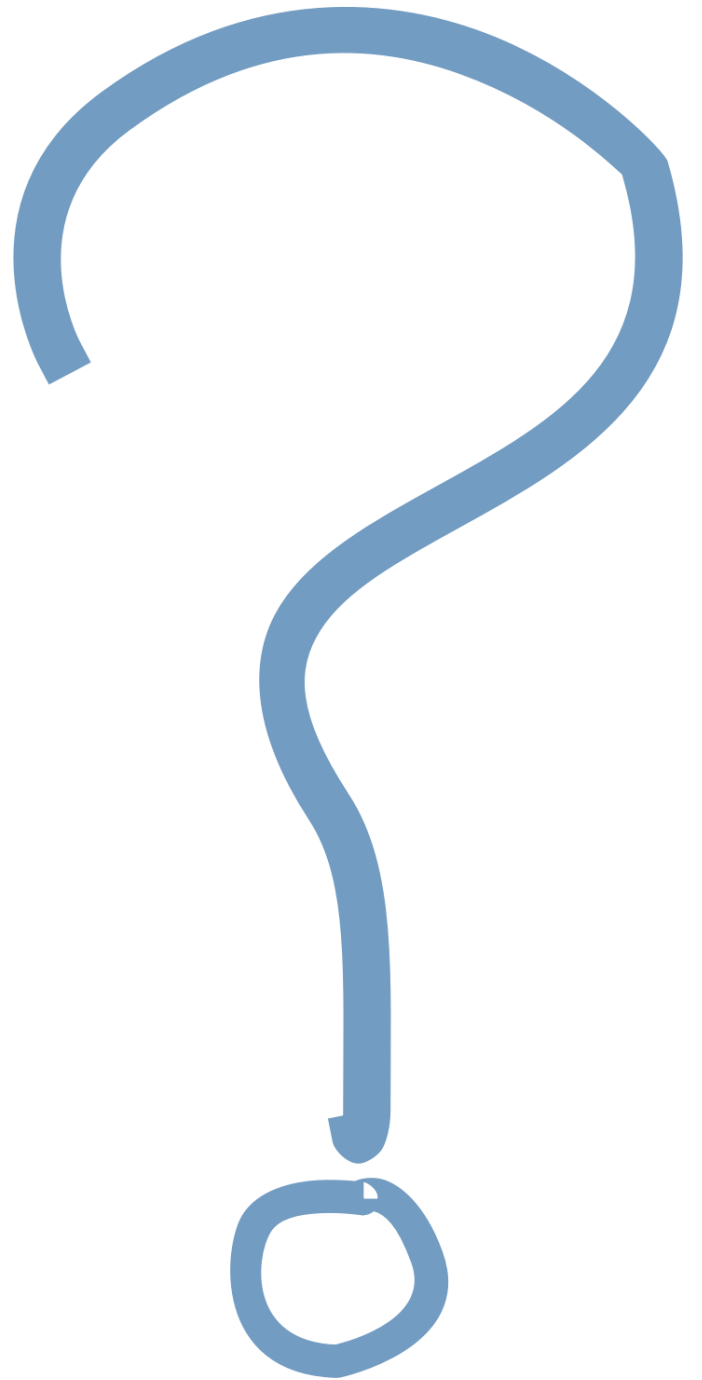
Re-view Re-expression

- Using the data from the warm-up
 - Try to straighten the plot by taking the log of height
 - Did that work?
 - How do you know?
 - Write the model for this relationship
- Use this model to predict the height of someone who is 16
- How would this work for someone who is 30?
 - Why?



M

C



All Unit Homework

- Vocabulary - Chapter 7
- P 164 (3-6)
- P 165 (11, 12, 15, 16)
- P 167 (23-28)
- P 192 (3, 4, 12, 13)
- P 193 (15-18, 27, 28)
- P 193 (20-22)
- P 239 (5, 6)
- P 250 (29-31)

Plus Barbie sheet,
FRAPPY,
AND
Review Sheet

