Unit 3 Regression Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Review problem Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_

|  |  |
| --- | --- |
| HEIGHTS | |
| Husband | Wife |
| 68.5 | 63.4 |
| 67.8 | 61.4 |
| 68.3 | 61.8 |
| 67.9 | 62.6 |
| 67.1 | 59.1 |
| 66.9 | 62.2 |
| 67.8 | 62.6 |
| 68.3 | 61.2 |
| 69.2 | 64.4 |
| 65.5 | 60.6 |
| 66.7 | 60.6 |
| 70.2 | 64.8 |
| 67.3 | 60.8 |
| 73.5 | 68.5 |
| 70.2 | 65.4 |
| 69.0 | 64.6 |
| 67.9 | 63.0 |
| 68.4 | 61.4 |
| 65.9 | 65.4 |
| 69.0 | 64.2 |

Do women tend to marry men taller than they are? A study was done with 20 married couples. The wife and husband’s heights were measured in inches.

1. Create the scatterplot on GRAPH PAPER
2. Describe the scatterplot.

Form:

Direction:

Strength:

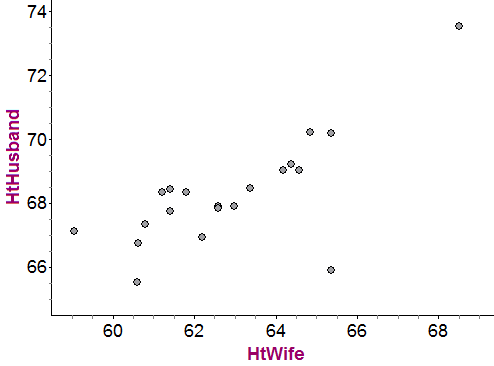
1. Find the LSRL using the calculator and write it below.
2. Add the line to the scatterplot. Be accurate.
3. Find the correlation (the r).
4. Interpret the slope in context.
5. Interpret the y-intercept. Does it make sense in in this context?
6. What would predict the height of a husband to be if his wife is 63.0 inches tall?
7. What was the actual height of the husband for the woman that was 63.0 inches tall from the data?
8. What is the residual? Actual - Prediction
9. What is R2.
10. What would predict the height of a husband to be if his wife is 74.5 inches tall?
11. How confident are you in that prediction?

ANSWER KEY Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_

|  |  |
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Do women tend to marry men taller than they are? A study was done with 20 married couples. The wife and husband’s heights were measured in inches.



1. Find the LSRL using the calculator.

(2) y = 0.575x + 32.106

1. Add the line to the scatterplot above. Be sure to show what points were used to draw the line.

(5)

1. Find the correlation.

(1) r = 0.732

1. Describe the scatterplot.

Positive

(4) Linear

Moderate (r = 0.732)

Outliers at (65.4, 65.9) and (68.5, 73.5)

1. Interpret the slope in context.

(3) For every increase of 1 inch in the wife’s height there tends to be an increase of 0.575 inches

in the husbands height.

1. What would predict the height of a husband to be if his wife is 63.0 inches tall?

(2) y = 0.575(63.0) + 32.106

y = 68.331 inches

1. What was the actual height of the husband for the woman that was 63.0 inches tall from the data? What is the residual?

(2) Actual height = 67.9 inches

e = 67.9 – 68.331

e = -0.431 inches

1. Interpret R2 in context.

(3) For this model 53.7% of the variability in the husband’s height can be explained by variations in the wife’s height.

1. What percent of the variability in husband’s height is explained by other factors?

(1) 42.3%

1. What does the R2 tell you about the confidence of your prediction for number 6?

(2) I can only be moderately confident in the prediction.

1. What would predict the height of a husband to be if his wife is 74.5 inches tall?

(2) y = 0.575(74.5) + 32.106

y = 74.944 inches

1. How confident are you in that prediction?

(2) Not confident since 74.5 lies outside the range of the data in the study.