## SCI 9 (Burnett) U2A1.6 - BB Tube Extension Exercise

Objective: I (the student) can create a scatter plot graph, insert and identify trend-line (Line of best fit), add and interpret equations of the trend-line, add and interpret the $R^2$ value.

Directions: Click **HERE** to open the data set Google Sheet. Go to "**File**" and "**Make a Copy**" that way you can create graphs of the data to answer the following questions. Or go to your school email and look for an email titled "**U2A1 - BB Tube Extension Data**"

## Example 1 Processing Time vs. Lot Size for the Toluca Company

The first column is the shipment size (in lots), the second is the time (man hours) it takes to process the shipment.

1. Produce a scatter plot with trend-line and $R^2$ value.
2. Identify and interpret.

| Independent Variable | Dependent Variable | Trend-line |
|---|---|---|
| | | Equation: |
| | | _____ |
| Slope | Y-Intercept | $R^2$ Value |
| Value: _____ | Value: _____ | Value: _____ |
| Meaning: | Meaning: | Meaning: |

3. Determine the predicted time of process a shipment of 50 lots. _____
4. Determine the predicted time for a shipment of 95 lots. _____
5. Determine the predicted time for a shipment of 150 lots. _____

## Example 2 Book Length and Price

For each of 15 books, the number of pages and the price is given. Some are hardcover (H); some are softcover (S).

1. Produce a scatter plot with trend-line and $R^2$ value.
2. Identify and interpret.
3.

| Independent Variable | Dependent Variable | Trend-line |
|---|---|---|
| | | Equation: |
| | | _____ |

| Slope | Y-Intercept | $R^2$ Value |
|---|---|---|
| Value: _____ | Value: _____ | Value: _____ |
| Meaning: | Meaning: | Meaning: |

4. The line does not fit very well. It would appear there is, if anything, a *negative* association between the two variables. Why? How could more pages result in lower price?

## Example 3 Muscle Mass vs. Woman's Age

Here we predict a woman's muscle mass (grams/cubic centimeter) on the basis a change of age (yrs).

1. Produce a scatter plot with trend-line and $R^2$ value.
2. Identify and interpret.

| Independent Variable | Dependent Variable | Trend-line |
|---|---|---|
| | | Equation: |
| | | _____ |

| Slope | Y-Intercept | $R^2$-Value |
|---|---|---|
| Value: _____ | Value: _____ | Value: _____ |
| Meaning: | Meaning: | Meaning: |

3. Predict muscle mass for a 60 year-old woman. (No 60 year old women are in the data set, yet we can still use the line to do this.)

4. At what age would you predict a woman to have no muscle mass left?