Reflection Summary for September 20, 2011

Compare and Contract the QCR and Pearson’s Correlation Coefficient

QCR
* Resistant to outliers
* Does not consider distance between data point and mean
* QCR is a good approach for leading students to Pearson’s CC
* Could show false measures +/- 1 for goodness of fit; i.e., QCR could be +/-1 even if not perfectly linear
* QCR = [ n(Q1) + n(Q3) - n(Q2) - n(Q4) ] / n
* Easier for students to grasp or understand (more intuitive & easier to calculate)
  **”How many”**

Pearson CC
* Sensitive to Outliers
* DOES consider the distance between data point and mean
r = [ SUM (product of z scores for x,y coordinates) ] / n-1
r is approximately the average of the product of the z-scores for each point
* More complex thus practically, technology needed to find Pearson r
* Measures form – measures linear association between two variables
  **”How much”**

QCR & Pearson
* Measures of strength and direction between two variables
* Use the mean lines for x and y to divide the scatterplot into 4 quadrants
* Unitless values between -1 and +1

GPS/CCSS STANDARDS: N/A
Compare and Contract the Median-Median Line and the Least Squares Regression Line (LSRL)

Med-Med
*Resistant to outliers because uses the median
*Divides data into three equal parts, then find the median point in each part
*Count points
*Easier to find (especially by hand); more intuitive
*Doesn’t always pass through the mean point
*How many

LSRL
*Non-resistant to outliers because uses the mean
*Minimizes total area of squares of the residuals (distance between the observed y and the predicted y)
*Considering distance from the mean point of x and y
*Residuals: minimizes vertical distances; sum to zero
*Lines goes through \((\bar{x}, \bar{y})\)
*Practically need technology to find LSRL
*How much

Med-Med & LSRL
*Linear (straight line) models that represent the data
*Predicts values for a response variable based on linear lines using an explanatory variable
*Both equations for the line are of the form: predicted y = a + bx ; where a is the y-intercept and b is the slope.

GPS/CCSS STANDARDS: M8D4, MM2D2, S-ID.6, S-ID.7, S-ID.8