PROBLEM SOLVED

MAKING SENSE OF MATHEMATICS

After watching the video, *Interpreting Correlation Coefficient,* complete the following problems.

1. We've seen that some data have a positive correlation, meaning that their scatter plots look linear. We've also seen that some data have no correlation, meaning that they don't seem to be related in a linear way. Statisticians quantify the closeness of data points to a line by the "correlation coefficient." If the correlation coefficient is 1, then the points lie perfectly on a line. If it is zero, then they don't resemble a line (they may be related in other ways). Match the following scatter plots to the correlation coefficient. (Part of the fun will be figuring out what a negative correlation coefficient means!)

Correlation Coefficients:
A) 1   B) 0.988   C) -0.8   D) 0   E) -0.2   F) 0.9   G) -1
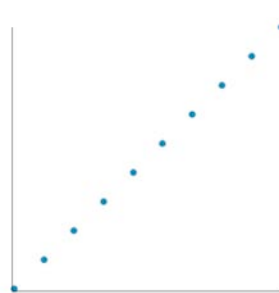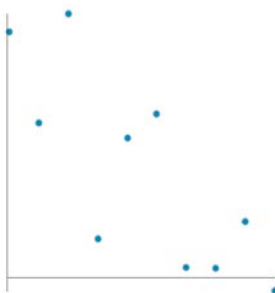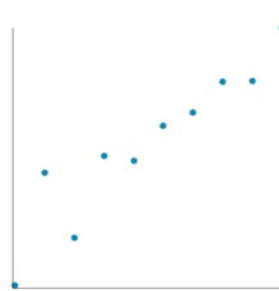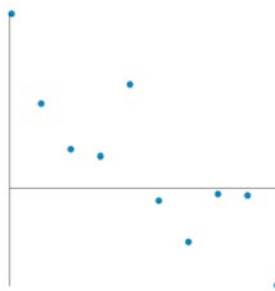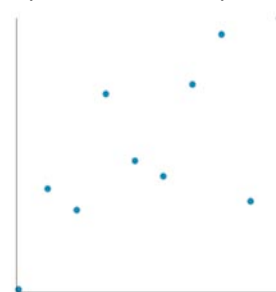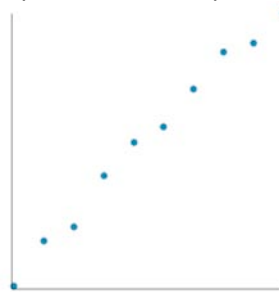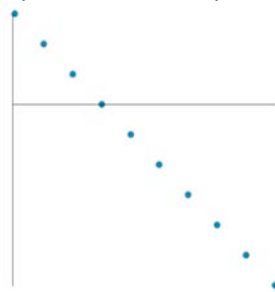
2. A study shows a strong negative correlation between hours of daylight, and admissions to a depression ward in a hospital. The more hours of daylight, the fewer the cases of depression. Is it possible that daylight prevents depression? Is it true that this study proves that daylight prevents depression (or that darkness causes depression)? If not, present some possible lurking variables that could explain this correlation.

3. a. Do the two variables represented in the following scatter plot have a positive or a negative correlation?
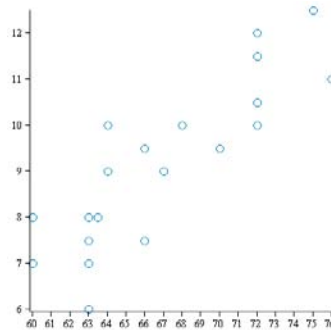
   b. Which one of the following is the correlation coefficient, r, of the scatter plot above?

      -1   -0.85   -0.15   0   0.15   0.85   1

4. Rank the following correlations from least to greatest (from most negative number to most positive number)
   a. The age of a randomly selected pet kitten, and the age of its owner
   b. The age of a Ford Escort, and its blue-book value
   c. The temperature in Dallas in degrees Fahrenheit, and the temperature in Dallas in degrees Celsius
   d. The height of a randomly selected man, and his weight
   e. The amount of our pie that I have eaten, and the amount left for you
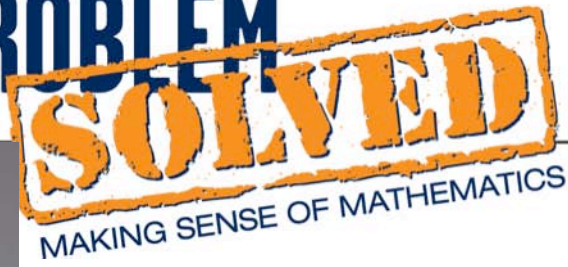
5. Is there a positive or negative correlation between area of a square and its side length, assuming the side length is between one and 20 inches? Is this correlation close to one or negative one? Explain your reasoning.