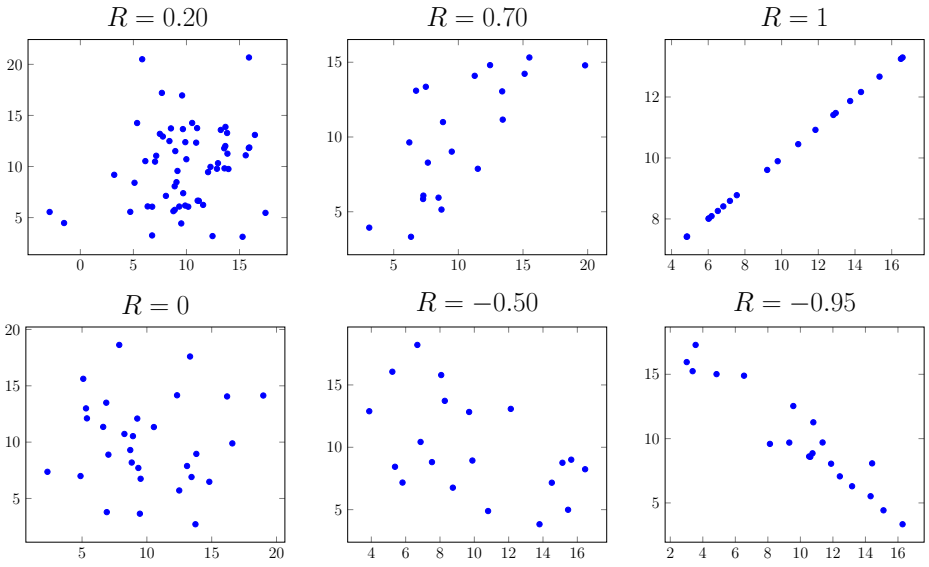
Correlation Math 111

For any scatterplot, the **correlation coefficient** is a number R that measures the strength of the linear association between the two variables.

Facts about Correlation

1. Correlation coefficients are always between -1 and 1.
2. If $R = 1$, the dots on the scatterplot all lie on a line with positive slope.
3. If $R = -1$, the dots on the scatterplot all lie on a line with negative slope.
4. If R is close to zero, then the assocation between the two variables is weak. If R is close to 1 or -1, then the association is strong.
5. Correlation coefficients don't have units, and they do not change if you change the units used to measure the variables.

Examples of Correlations



Questions

1. What if every woman always married a man who was exactly 3 years older than she is. What would the correlation coefficient between the ages of husbands and wives be?
2. What if we measure the correlation between weight of elephants (in pounds) and the lengths of their trunks (in inches), and we got $R = 0.79$. What would happen to R if we switched to metric units (kilograms and centimeters) instead?
3. What is wrong with the following sentence? "We found a high correlation ($R = 1.13$) between students ratings of teachers and the ratings of other faculty."