**M**ETHODS AND **M**EANINGS

MATH NOTES

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- ## Describing Association – Part 1

- An association (relationship) between two numerical variables can be described by its form, direction, strength, and outliers.

- If one variable increases as the other variable increases, there is said to be a **positive association**. If one variable increases as the other variable decreases, there is said to be a **negative association**. If there is no relationship between the variables, then the points in the scatterplot have **no association**. An example of each situation is illustrated below.

Positive Association   Negative Association   No Association

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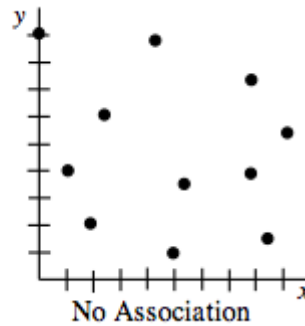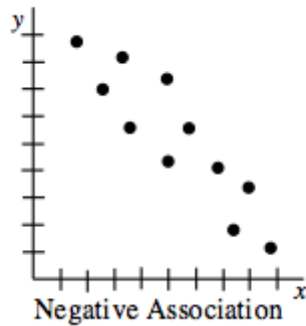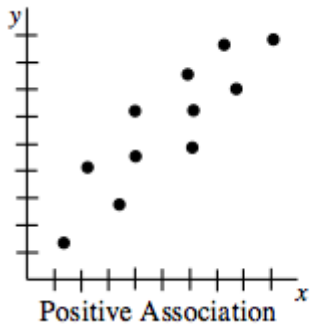
- When there is a positive or negative association, the shape of the pattern is called the **form** of the association. Associations can have a **linear form** or a **non-linear-form**, and the form can be made up of **clusters** of data. See some examples below.
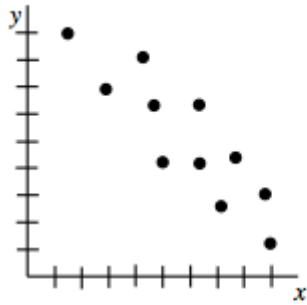
Negative **linear** association (for example, gas mileage decreases as the weight of cargo on a truck increases)
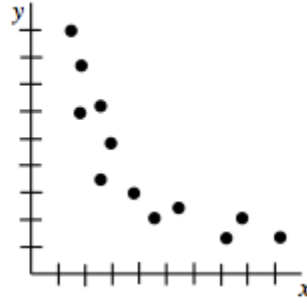
Negative **non-linear** association (for example, temperature of a cup of coffee decreases over time)
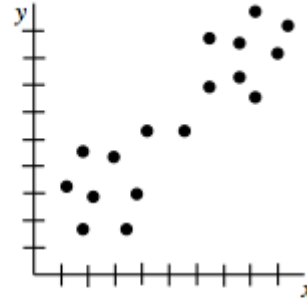
Positive **linear** association with **clusters** (for example, height increases as shoe size increases; one cluster is mostly girls and the other cluster is mostly boys)