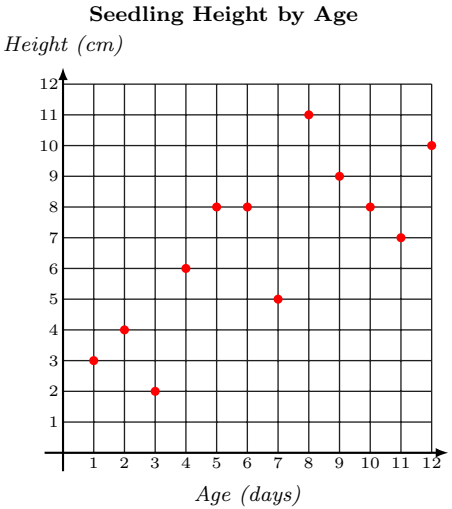
Artifact 18 – Scatterplots and Association

Driving Question: How do you build a scatterplot from a table, and what do the points tell you about how two variables are related?

Example 1

The table shows the age, in days, of twelve bean seedlings and the height of each, in centimeters. Plot the data.

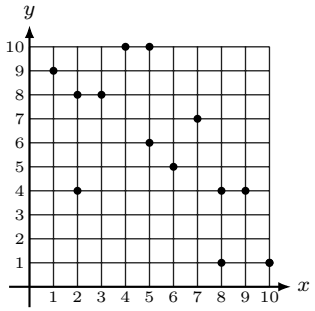


Age (days)	Height (cm)
1	3
2	4
3	2
4	6
5	8
6	8
7	5
8	11
9	9
10	8
11	7
12	10

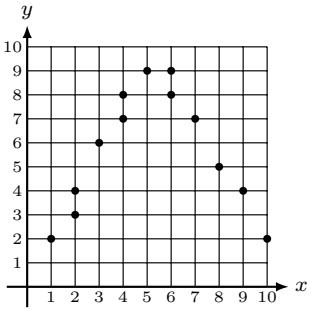
Describe the association shown by the data.
Positive linear: height tends to increase with age.

Example 2

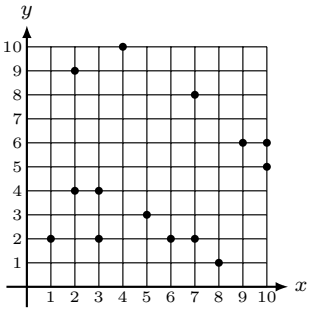
Each scatterplot shows a different set of data. Describe the association in each.



x: age of a tire (years)
y: tread depth (mm)
Negative linear: as x increases, y tends to decrease.



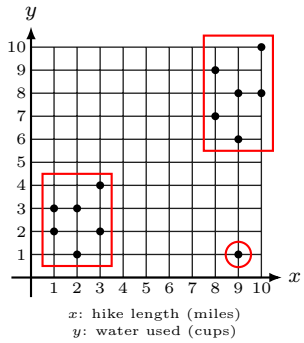
x: lemonade price (dollars)
y: daily profit (tens of dollars)
Nonlinear: the points rise, then fall, in a curve.



x: letters in first name
y: game score
No association: no pattern; x does not tell you y.

Example 3

The scatterplot shows the length of each of thirteen hikes and the water the hiker used.



x: hike length (miles)
y: water used (cups)

Describe the association shown.
Positive linear.

Identify any cluster or outlier. Describe each in the context of the hikes.
Cluster: short hikes (1 to 3 miles) using 1 to 4 cups. Cluster: long hikes (8 to 10 miles) using 6 to 10 cups. Outlier: the 9-mile hike that used 1 cup.

Vocabulary

bivariate data data that records two variables for each person or thing measured, written as ordered pairs (x, y)

scatterplot a graph of plotted points that shows the relationship between a bivariate set of data

association the overall pattern between the two variables in a scatterplot

positive association as x increases, y tends to increase; the points rise from left to right

negative association as x increases, y tends to decrease; the points fall from left to right

no association the points show no pattern; knowing x tells you nothing about y

linear association the points cluster around a straight line

nonlinear association the points follow a pattern that is not a straight line (often a curve)

Notes to Forgetful Self

Name	What the points do
positive linear	points rise left to right, near a line
negative linear	points fall left to right, near a line
no association	no pattern at all
nonlinear	a pattern that is a curve, not a line
cluster	a group of points close together
outlier	a point far from the rest

Must every point lie on one line for the association to be linear? Explain.
No. The points only have to cluster around a line.