

Reading Scatter Plots and Spotting Patterns

Grade 8 math · Worksheet Answer Key · Standards: 8.SP.A.1

Each solution names the direction and form of the association and points out clusters or outliers. When your description differs, redraw the pattern with a pencil from left to right and check the wording of the context.

Standards: 8.SP.A.1 · **Level:** Grade 8

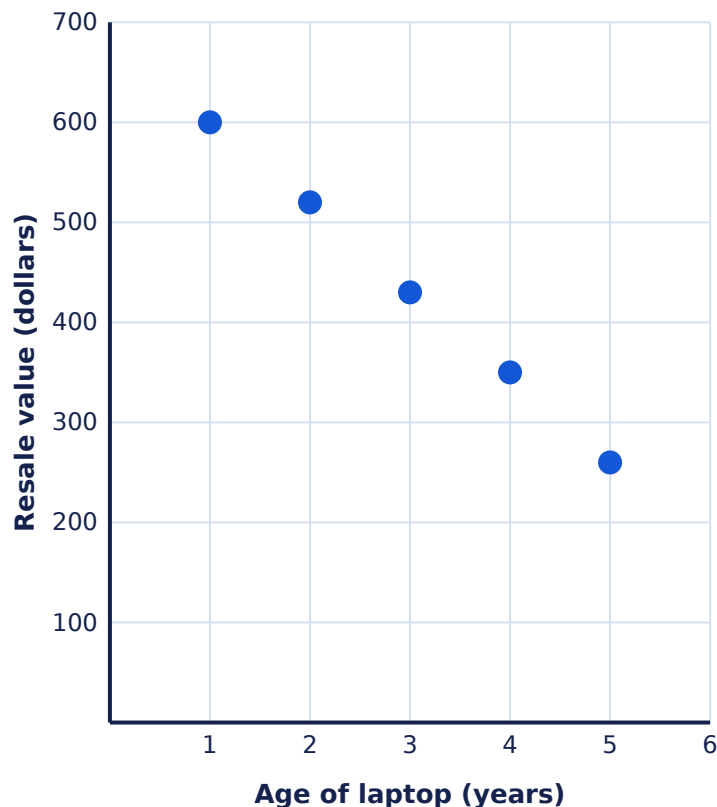
Problem 1 Choose the axis

The variable that might influence the other goes on the x-axis. Rehearsal time could affect forgotten lines, not the reverse.

Hours rehearsed

Problem 2 Plot a table

Ordered pairs: (1, 600), (2, 520), (3, 430), (4, 350), (5, 260).



Laptop age and resale value.

The points fall from left to right and stay close to a line.

Negative linear association

Problem 3 Describe in words

One variable goes up while the other goes down.

Negative association

Problem 4 Read a rising plot

The points go up from left to right and stay near a straight line.

Positive linear association

Problem 5 No association

Daylight and temperature are related, and so are age and price. A locker digit has nothing to do with shoe size.

(b)

Problem 6 Find the outlier

Five of the points follow the pattern $y = 2x + 1$. At $x = 5$ the pattern gives 11, but the data show 25.

The outlier is (5, 25)

Problem 7 Two groups

One cluster sits near heights of 4 to 6 inches and weights of 10 to 14 pounds. A second cluster sits near heights of 14 to 17 inches and weights of 58 to 74 pounds. There is a large gap between them.

Overall the points rise.

Two clusters (small dogs and large dogs); positive association

Problem 8 Falling with spread

The points fall from left to right and follow a line loosely, with some up-and-down spread.

Moderate negative linear association

Problem 9 Doubling table

Each y doubles. The increases are 1, 2, 4, 8, which keep growing, so the points curve upward instead of lying near a line.

Nonlinear (positive association)

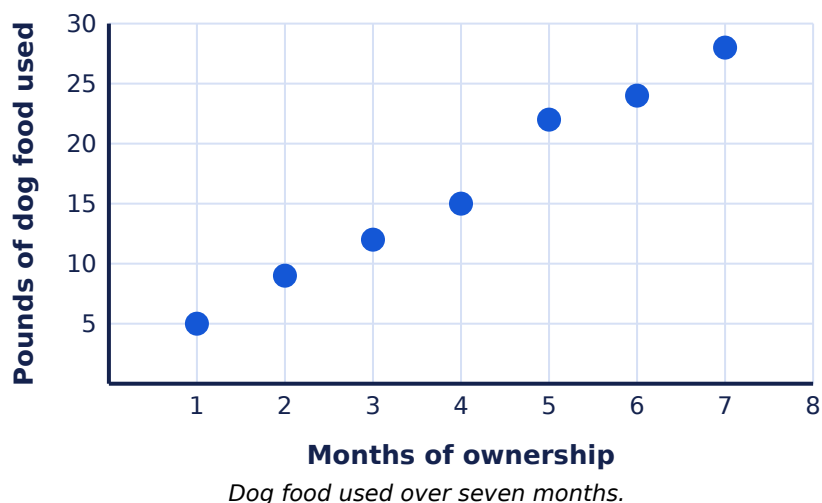
Problem 10 Spot the stray point

Eight points rise steadily along a line. The point at 4 weeks with 52 books is far above the others.

Outlier (4, 52); the rest show positive linear association

Problem 11 Build a scatter plot

Plot each pair with months on the horizontal axis and pounds on the vertical axis.



The points rise and stay near a line.

Positive linear association

Problem 12 Strong or weak

In plot A the points lie close to a rising line. In plot B they bounce up and down with no clear pattern.

Plot A shows the stronger association (positive linear); plot B shows little or none

Problem 13 Curved description

The points go down, so the association is negative. They follow a curve that flattens, not a line.

Negative nonlinear association

Problem 14 Effect of an outlier

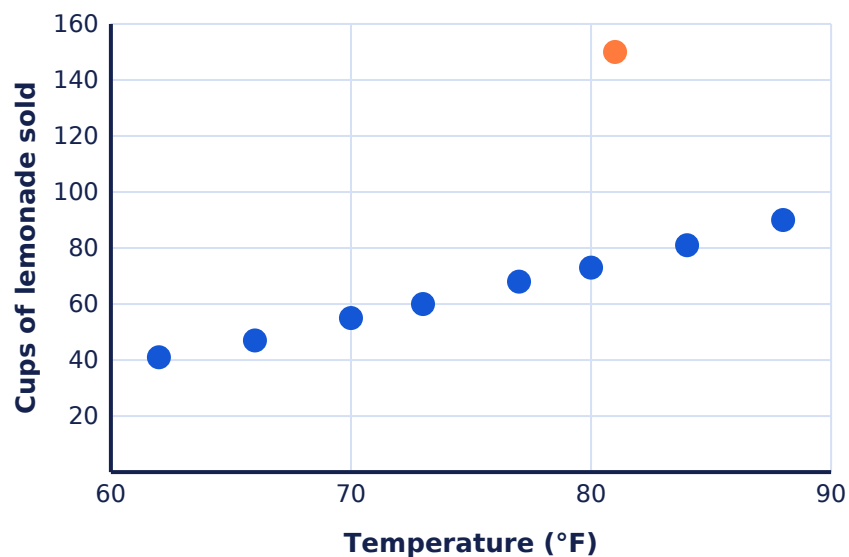
The 11 other points rise steadily. The point (6, 20) lies far below the line and makes the pattern look weaker.

Check whether it is a recording error or a real case, such as a student who was sick during the test, before deciding to set it aside.

The outlier weakens the apparent association; investigate it before excluding it

Problem 15 Lemonade stand

Plot temperature across the bottom and cups up the side.



Lemonade sales and temperature.

Eight points rise along a line. The point (81, 150) is far above the pattern; a school fair or a special event could explain the extra sales.

Positive linear association with the outlier (81, 150)

Problem 16 Game downloads

Downloads fall every month, so the association is negative. The drops shrink from 280 to 180 to 120 to 70 to 40, so the points flatten out instead of following a line.

Negative nonlinear association

Problem 17 Plant growth table

Heights increase about 1.1 inches for each extra hour, so nine points rise along a line. At 6 hours the pattern gives about 10.2 inches, but one plant measured 2.0.

Positive linear association; outlier (6, 2.0)

Problem 18 Commute times

One cluster has students living within 2 miles who travel 5 to 9 minutes. A second cluster has students 8 to 10 miles away who travel 26 to 33 minutes. The point (3, 40) is far above the pattern: a student who lives 3 miles away but takes 40 minutes, perhaps by a slow bus route.

Clusters near 1 to 2 miles and 8 to 10 miles; outlier (3, 40); overall positive association

Problem 19 Cooling coffee

The temperatures fall, so the association is negative. The drops are 40, 28, 20, 14, 9, 7, which shrink, so the points curve and flatten.

A line drops at a constant rate and would eventually predict temperatures below room temperature.

Negative nonlinear association

Problem 20 Who is right?

The points do not move in one direction: they go up first and down later. A single positive or negative label does not describe the whole pattern, but the curved arch is clearly not a line.

Ava is correct: the association is nonlinear