Direction/form/strength of association

6 questions | 18 marks

Equivalent correct methods earn the corresponding marks.

1. Describe direction, form and strength for $(1, 10), (2, 8), (3, 6), (4, 4)$. [3 marks]

Paired measurements

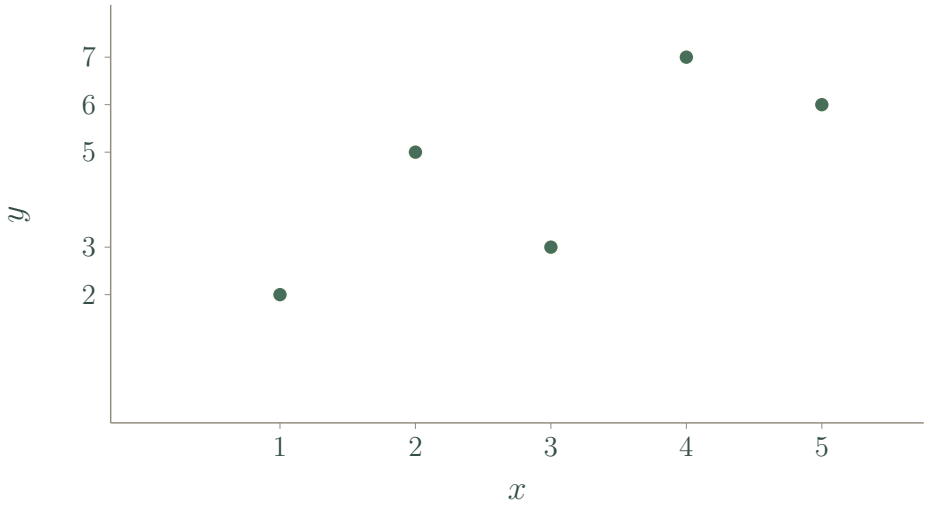
x	y
1	10
2	8
3	6
4	4

Each one-unit rise in x reduces y by 2.

All points lie exactly on $y = 12 - 2x$.

Answer: Perfect negative linear association.

2. Describe the supplied pairs $(1, 2), (2, 5), (3, 3), (4, 7), (5, 6)$. [3 marks]



The overall response increases as x increases.

It is not exact and no strong curvature is evident.

Answer: Positive, roughly linear association with visible scatter.

3. A scatter plot rises sharply but its points are widely scattered. Is “strong because it is steep” valid? [3 marks]

Slope and strength describe different features.

Assess closeness to the trend, not just steepness.

Answer: No. Wide scatter can indicate weak linear association despite a steep trend.

4. What form is suggested by $(0, 1), (1, 2), (2, 4), (3, 8)$? [3 marks]

Paired measurements

x	y
0	1
1	2
2	4
3	8

Successive y-values double.

The increase is not constant, so a straight line is not the natural form.

Answer: Positive nonlinear, exponential-looking association.

5. The U-shaped data $(-2, 4), (-1, 1), (0, 0), (1, 1), (2, 4)$ have $r = 0$. Is there no relationship? [3 marks]

The increasing and decreasing sections balance the linear correlation.

Inspect the graph; r only summarises a straight-line tendency.

Answer: No. There is a strong nonlinear relationship $y = x^2$.

6. Two graphs show the same data but use centimetres and metres on the vertical axes. Should their correlation strengths differ? [3 marks]

Every vertical value is multiplied by the same positive constant.

The display’s apparent steepness can change while r stays the same.

Answer: No. A positive unit conversion does not change the association strength.