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# 2.5 Scatter Diagram

## Definition

A **scatter diagram** plots pairs of quantitative observations on a coordinate plane to visualise the relationship between two variables. Each point represents one observation【940426810236033†L114-L190】.

## Interpretation

* **Perfect positive correlation (r = 1)** – Points lie exactly on an upward‑sloping line.
* **Perfect negative correlation (r = –1)** – Points lie on a downward‑sloping line.
* **Positive correlation** – Points cluster around an upward trend line.
* **Negative correlation** – Points cluster around a downward trend line.
* **No correlation** – Points are scattered randomly with no discernible pattern【940426810236033†L114-L190】.

The density of points around a line indicates the strength of the relationship; haphazard scatter suggests little or no correlation【940426810236033†L193-L202】.

## Uses

Scatter diagrams help detect outliers, assess linearity and decide whether correlation or regression analysis is appropriate.

## Example

Plotting hours studied versus exam score shows whether greater study time is associated with higher scores. A cluster trending upward suggests a positive relationship.

## Summary

Scatter diagrams are simple yet powerful tools for visually assessing relationships between two quantitative variables【940426810236033†L114-L190】【940426810236033†L193-L202】.

## Reflection questions

1. How would you interpret a scatter plot where points fall along a downward line?
2. Why might a scatter diagram be preferred before computing correlation coefficients?
3. Can scatter diagrams detect non‑linear relationships? Explain.

## References