Observational versus experimental data

6 questions | 11 marks

Equivalent correct methods earn the corresponding marks.

1. A teacher records noise in existing normal lessons. Classify the study. [1 mark]

No noise treatment is assigned.

Answer: Observational.

2. Identical cars are randomly assigned two ramp surfaces. Classify the study. [1 mark]

The surface is deliberately assigned.

Answer: Experimental.

3. Two different classes use different revision methods and earn different scores. Why is cause not established by this alone? [2 marks]

Other differences could explain the scores.

Answer: The classes may differ in prior knowledge, teachers or other conditions.

4. Name two conditions to keep similar when testing two paper-plane designs. [2 marks]

These could affect distance independently of design.

Answer: For example, paper type and launch method.

5. A survey links cycling with reported fitness. Write a cautious conclusion. [2 marks]

Other activity and health differences may contribute.

Answer: Cycling and reported fitness are associated in this sample; cause is not established.

6. Design a fair battery-brand comparison using torches. [3 marks]

Separate brand from torch/use effects and observe variation.

Answer: Randomly allocate batteries to identical torches, keep operation similar, repeat per brand and compare run times.