Bias, variation and uncertainty

6 questions | 15 marks

Equivalent correct methods earn the corresponding marks.

1. Rewrite “Don’t you agree homework is a waste of time?” neutrally. [2 marks]

Remove the suggested judgement.

Answer: For example: “How useful do you find homework?” with balanced response options.

2. Of 100 invitees, 40 reply and 24 say yes. Find the yes percentage among respondents and state a limitation. [3 marks]

24/40×100=60%.

The remaining 60 invitees have not supplied answers.

Answer: 60%; non-respondents’ views are unknown.

3. A fair sample of 40 includes 12 walkers. Estimate the number among 800 students and state a limitation. [3 marks]

12/40=0.3.

0.3×800=240.

Answer: About 240; another fair sample may differ.

4. Must one calculation be wrong if two random samples have different means? [2 marks]

Ordinary sampling variation is possible.

Answer: No. Different sampled values can correctly produce different means.

5. A report calls the single week with the longest queue typical. Explain the concern. [2 marks]

Selective timing can promote a misleading conclusion.

Answer: An exceptional selected period may not represent ordinary conditions.

6. Give a transparent way to discuss a valid outlier. [3 marks]

Do not silently remove inconvenient valid data.

Answer: Report it, examine its effect, and explain any comparison with and without it.