Random and non-random sampling

6 questions | 13 marks

Equivalent correct methods earn the corresponding marks.

1. Give a simple random method for choosing 15 of 150 students. [2 marks]

Use a complete list and a chance method without replacement.

Answer: Number 1-150 and fairly draw 15 distinct numbers.

2. A systematic sample starts at 3 with interval 10. Give its first five entries. [2 marks]

Add 10 each time.

Answer: 3,13,23,33,43.

3. A 600-entry list uses systematic interval 10. Find the sample size. [1 mark]

$600 \div 10 = 60$.

Answer: 60.

4. Groups A and B contain 240 and 360 students. Allocate a proportional sample of 50. [3 marks]

Total 600.

$50 \times \frac{240}{600} = 20;\ 50 \times \frac{360}{600} = 30$.

Answer: 20 from A; 30 from B.

5. An optional sports-website poll asks all students' views on sports facilities. Explain a concern. [2 marks]

The voluntary group may not represent everyone.

Answer: Sports-interested students may be more likely to visit and respond.

6. A list repeats bus, walk, cycle. Why could selecting every third entry be unsuitable? [3 marks]

A random start does not eliminate list periodicity.

Answer: The interval matches the pattern and may select just one travel method.