Standard deviation

6 questions | 15 marks

Equivalent correct methods earn the corresponding marks.

1. Find the population SD of 2, 4, 6. [3 marks]

Mean 4; squared deviations total 8.

Divide by 3 and take the square root.

Answer: $\sqrt{\frac{8}{3}} \approx 1.63$

2. Find the population SD of 3, 3, 7, 7. [3 marks]

Mean 5; four squared deviations are 4.

Variance $16 \div 4 = 4$; SD 2.

Answer: 2

3. All scores increase by 10. What happens to their SD? [2 marks]

The mean also increases by 10.

Every deviation from the mean stays equal.

Answer: It is unchanged.

4. Lengths measured in metres have SD 0.4 m. Express the SD in centimetres. [2 marks]

Conversion multiplies every value by 100.

It multiplies SD by 100.

Answer: 40 cm

5. A sample of 5 measurements has squared deviations totalling 20. Find the sample SD. [3 marks]

Divide by $5-1=4$.

Variance $20\div 4=5$; SD $\sqrt{5}$.

Answer: $\sqrt{5}\approx 2.24$

6. Population A has SD 2.1 min and B has SD 5.4 min. Which is less variable around its mean? [2 marks]

The smaller standard deviation indicates less spread about the mean.

This does not determine which group has the lower mean.

Answer: A