Self-assessment: 21 Summarising data

1. Find the mean and variance of the following set of data:

$$11, 36, 71, 44, 84, 62, 87$$

(accessible to students on the path to grade 3 or 4) [3 marks]

2. The heights of 72 trees are summarised in the following table:

Height (m)	Frequency
2.6–3	11
3–3.5	21
3.5–4.5	23
4.5–5.5	11
5.5–7	6

Estimate the mean and standard deviation of this sample of heights.

(accessible to students on the path to grade 3 or 4) [4 marks]

3. A set of data can be summarised as follows:

$$\sum_{i=1}^{12} x_i = 47, \quad \sum_{i=1}^{12} x_i^2 = 201.7$$

Calculate the standard deviation of the data.

(accessible to students on the path to grade 3 or 4) [5 marks]

4. All students in a class recorded how long, in minutes, it took them to travel to school that morning. The results are summarised in a cumulative frequency table:

Time in minutes (t)	Cumulative frequency
$0 < t \leq 6$	0
$0 < t \leq 10$	6
$0 < t \leq 15$	12
$0 < t \leq 20$	22
$0 < t \leq 30$	38
$0 < t \leq 45$	45

(a) Fill in the following frequency table:

Time in minutes (t)	Frequency
$6 < t \leq 10$	6
$10 < t \leq 15$	
$15 < t \leq 20$	
$20 < t \leq 30$	
$30 < t \leq 45$	

(b) Calculate an estimate for the mean and variance of the data.

(c) Explain why your answer is only an estimate.

(accessible to students on the path to grade 5 or 6) [10 marks]

5. The mean IB score of a group of eight students is 34.5 and the variance of the scores is 5.75. Another student with the score of 38 points joins the group. Find the new mean and variance of the scores.

(accessible to students on the path to grade 5 or 6) [8 marks]