

HL Paper 2

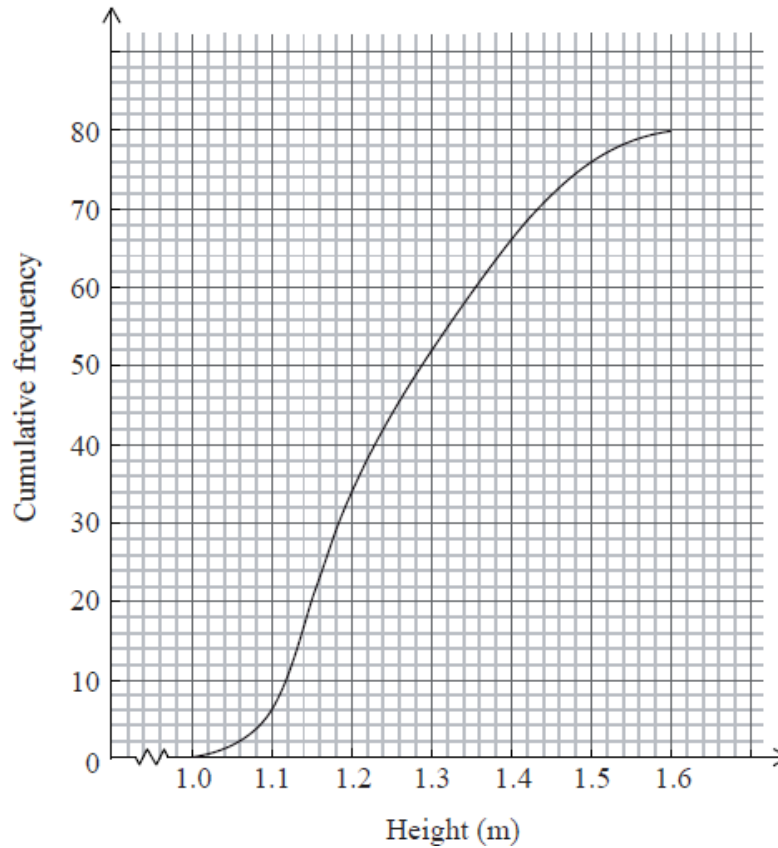
The company *Fresh Water* produces one-litre bottles of mineral water. The company wants to determine the amount of magnesium, in milligrams, in these bottles.

A random sample of ten bottles is analysed and the results are as follows:

6.7, 7.2, 6.7, 6.8, 6.9, 7.0, 6.8, 6.6, 7.1, 7.3.

Find unbiased estimates of the mean and variance of the amount of magnesium in the one-litre bottles.

The heights of all the new boys starting at a school were measured and the following cumulative frequency graph was produced.



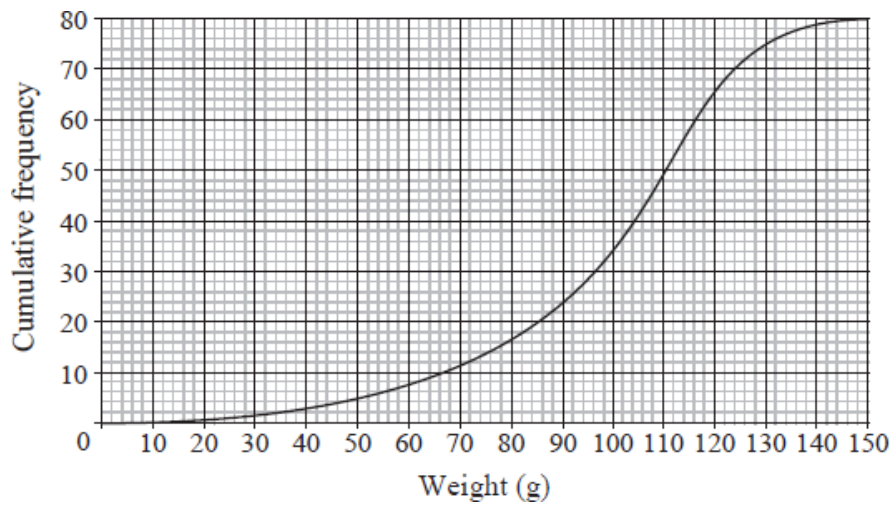
a. Complete the grouped frequency table for these data.

[2]

Interval	Frequency
]1.0, 1.1]	
]1.1, 1.2]	
]1.2, 1.3]	
]1.3, 1.4]	
]1.4, 1.5]	
]1.5, 1.6]	

- b. Estimate the mean and standard deviation of the heights of these 80 boys. [2]
- c. Explain briefly whether or not the normal distribution provides a suitable model for this population. [2]

The cumulative frequency graph below represents the weight in grams of 80 apples picked from a particular tree.



- a. Estimate the [2]
- (i) median weight of the apples;
 - (ii) 30th percentile of the weight of the apples.
- b. Estimate the number of apples which weigh more than 110 grams. [2]