3. Gill buys a bag of logs to use in her stove. The lengths, l cm, of the 88 logs in the bag are summarised in the table below.

Length (l)	Frequency (f)
$15 < l \leqslant 20$	19
$20 < l \leqslant 25$	35
$25 < l \leqslant 27$	16
$27 < l \leqslant 30$	15
$30 < l \leqslant 40$	3

A histogram is drawn to represent these data.
The bar representing logs with length $27 < l \leqslant 30$ has a width of 1.5 cm and a height of 4 cm.

(a) Calculate the width and height of the bar representing log lengths of $20 < l \leqslant 25$

(3)

(b) Use linear interpolation to estimate the median of l

(2)

The maximum length of log Gill can use in her stove is 26 cm.
Gill estimates, using linear interpolation, that x logs from the bag will fit into her stove.

(c) Show that $x = 62$

(1)

Gill randomly selects 4 logs from the bag.

(d) Using $x = 62$, find the probability that all 4 logs will fit into her stove.

(2)

The weights, W grams, of the logs in the bag are coded using $y = 0.5w - 255$ and summarised by

$$n = 88 \qquad \sum y = 924 \qquad \sum y^2 = 12\,862$$

(e) Calculate

(i) the mean of W

(3)

(ii) the variance of W

(3)

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Question 3 continued

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Question 3 continued

(Total for Question 3 is 14 marks)