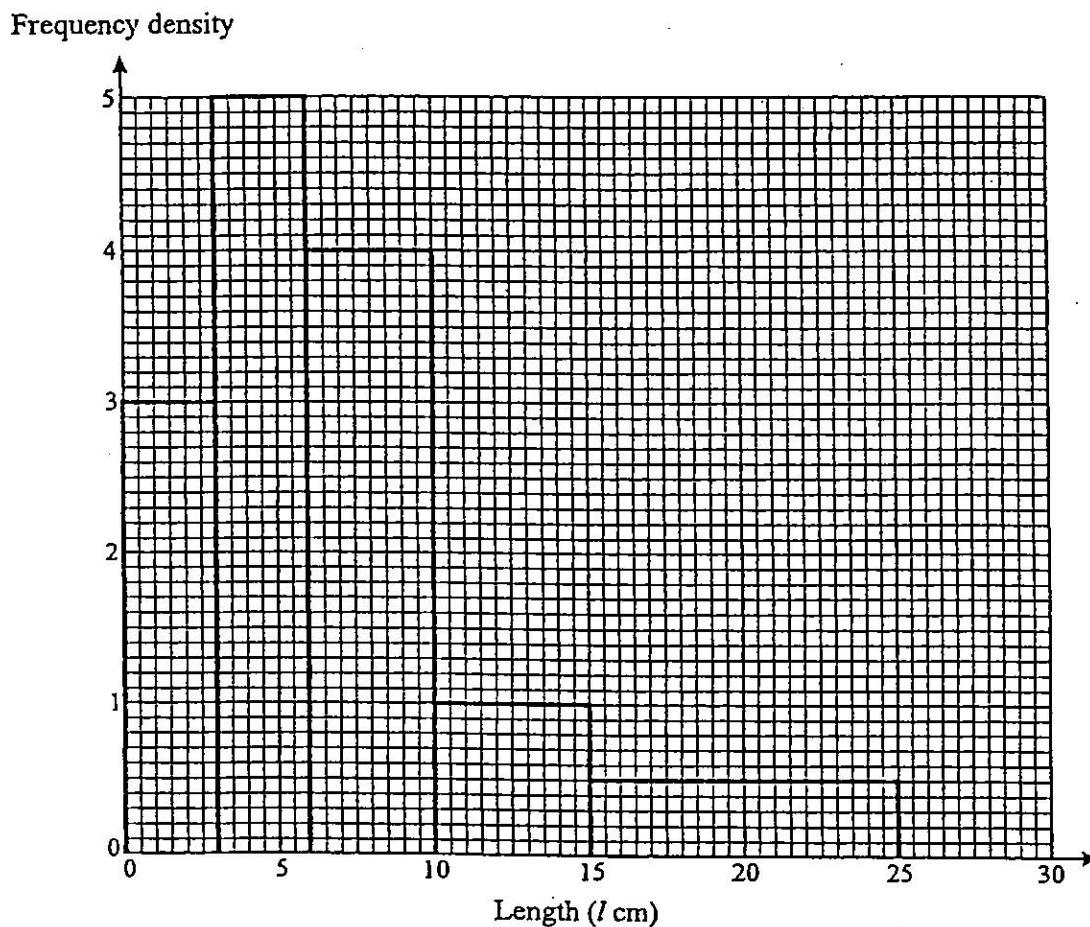6   A student measured the length, l cm, for each of a sample of 50 pebbles. The results are summarised in the histogram drawn below.

Frequency density

Length (l cm)

Jan 04

You are given that the number of pebbles in the $0 \leqslant l < 3$ class is 9.

(i) Copy and complete the table below.   [3]

Length (l cm)	Frequency
$0 \leqslant l < 3$	9
$3 \leqslant l < 6$	
$6 \leqslant l < 10$	
$10 \leqslant l < 15$	
$15 \leqslant l < 25$	

(ii) Use your completed table from part (i) to estimate the mean and standard deviation of the lengths of the pebbles in the sample.   [6]

5 The owner of a car repair shop conducted a survey into the length of time that cars were in his repair shop undergoing repairs before being returned to their owners. He measured the time, t hours, that it took for each of a sample of 120 cars in his shop to be repaired and returned to their owners. The data are illustrated in the histogram below. 50 cars were repaired in the period $2 \leqslant t < 4$.

Jan 05
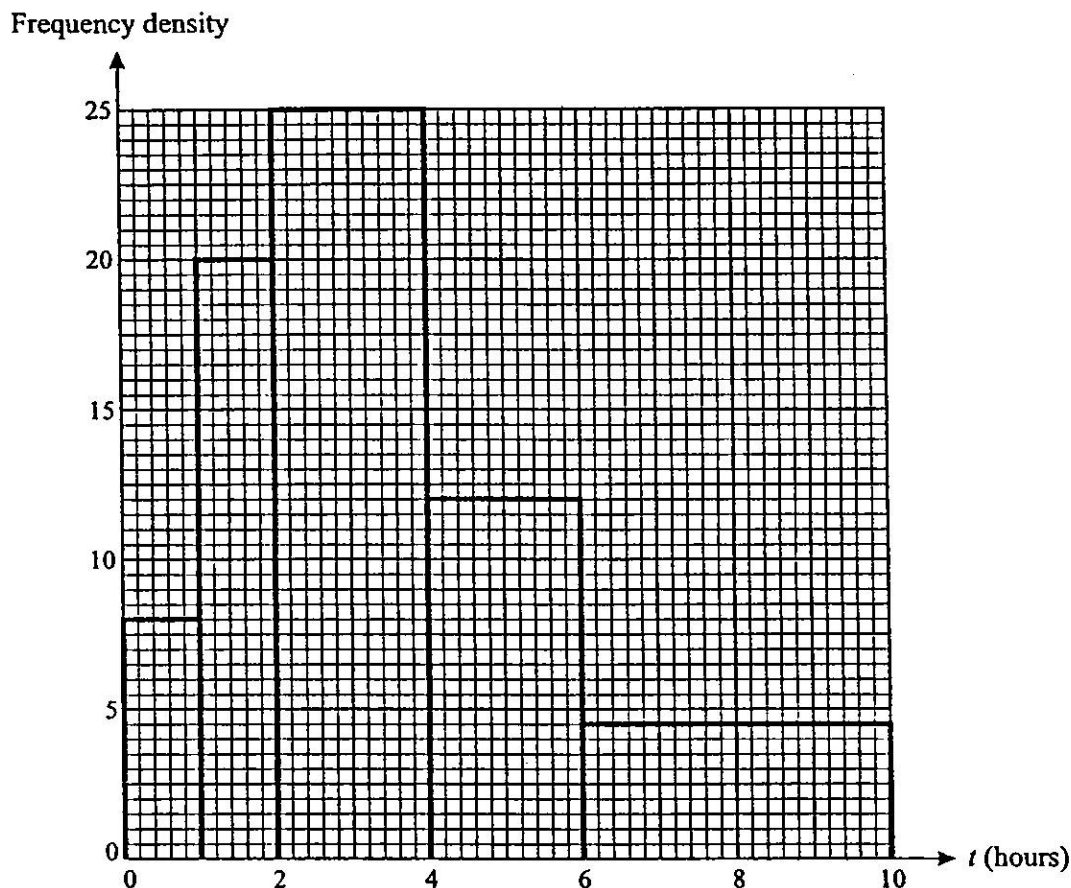
(i) Estimate the mean repair time for the sample of 120 cars. [4]

(ii) Estimate the standard deviation of the repair times for the sample of 120 cars. [3]

4 For a sample of divorced women, the table below gives the age, a years, at which each woman was divorced.

a	Frequency	Frequency density
$16 \leqslant a < 20$	8	2
$20 \leqslant a < 30$	30	
$30 \leqslant a < 50$	40	
$50 \leqslant a < 70$	16	
$70 \leqslant a < 90$	6	

Jun 03

(i) It is intended to draw a histogram to represent the data. The frequency density of the first class is 2, as shown in the table. Find the frequency density for each of the remaining classes, and draw a histogram on graph paper to represent the data. You should use scales of 1 cm to 5 years on the age axis and 1 cm to 0.2 units on the frequency density axis. [5]

(ii) Calculate estimates of the mean and standard deviation of the ages at which women in the sample were divorced. [5]

4   A doctor conducted a survey about the ages of patients who visited his surgery. He chose a day at random and recorded the age, in completed years, of each patient visiting the surgery on that particular day. The results are given in the table below.

Age in completed years	0−9	10−19	20−29	30−39	40−59	60−99
Frequency	19	6	7	11	13	24

(i) The doctor decided to draw a histogram of the data. He calculated that the frequency density for the 10−19 class was 0.6. Calculate the other frequency densities, and draw a histogram to represent the data.   [5]

(ii) Later the doctor decided that picking just one day at random was a bad idea, so he conducted a second survey. This time patients were chosen at random from a list of all the patients who had visited the surgery in the last six months. The ages, in completed years, of the selected patients are recorded below.

```
 3    4    4    7   13   18   24   26   28   31
34   35   35   36   42   47   49   57   59   61
64   64   67   72   73   78   81   81   83   86
```

Draw a stem-and-leaf diagram to show the data, and state one advantage which the stem-and-leaf diagram has when compared with a histogram.   [4]