**Name:**

**TAKE HOME Quest Chapter 14:**

**Due: February 20th**

**1.** One thousand candidates sit an examination. The distribution of marks is shown in the following grouped frequency table.

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Marks | 1–10 | 11–20 | 21–30 | 31–40 | 41–50 | 51–60 | 61–70 | 71–80 | 81–90 | 91–100 |
| Number of candidates | 15 | 50 | 100 | 170 | 260 | 220 | 90 | 45 | 30 | 20 |

(a) **Complete** the following table, which presents the above data as a cumulative frequency distribution.

(3)

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Mark | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 |
| Number of candidates | 15 | 65 |  |  |  |  | 905 |  |  |  |

(b) Draw a cumulative frequency graph of the distribution, using a scale of 1 cm for 100 candidates on the vertical axis and 1 cm for 10 marks on the horizontal axis. (use graph paper)

(5)

(c) Use your graph to answer parts (i)–(iii) below,

(i) Find an estimate for the median score.

(2)

(ii) Candidates who scored less than 35 were required to retake the examination.   
How many candidates had to retake?

(3)

(iii) The highest-scoring 15% of candidates were awarded a distinction.  
Find the mark above which a distinction was awarded.

(3)

(Total 16 marks)

**2.** At a conference of 100 mathematicians there are 72 men and 28 women. The men have a mean height of 1.79 m and the women have a mean height of 1.62 m. Find the mean height of the 100 mathematicians.

(Total 4 marks)

**3.** The table shows the scores of competitors in a competition.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Score | 10 | 20 | 30 | 40 | 50 |
| Number of competitors with this score | 1 | 2 | 5 | *k* | 3 |

The mean score is 34. Find the value of *k.*

(Total 4 marks)

**4.** Three positive integers *a*, *b*, and *c*, where *a* < *b* < *c*, are such that their median is 11, their mean is 9 and their range is 10. Find the value of *a*.

(Total 6 marks)

**5.** The number of hours of sleep of 21 students are shown in the frequency table below.

|  |  |
| --- | --- |
| **Hours of sleep** | **Number of students** |
| 4 | 2 |
| 5 | 5 |
| 6 | 4 |
| 7 | 3 |
| 8 | 4 |
| 10 | 2 |
| 12 | 1 |

Find

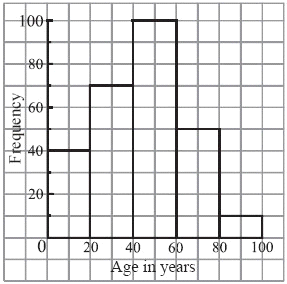
(a) the median;

(b) the lower quartile;

(c) the interquartile range.

(Total 6 marks)

**6.** The histogram below represents the ages of 270 people in a village.



(a) Use the histogram to complete the table below.

|  |  |  |
| --- | --- | --- |
| Age range | Frequency | Mid-interval value |
| 0  age  20 | 40 | 10 |
| 20 ≤ age  40 |  |  |
| 40 ≤ age  60 |  |  |
| 60 ≤ age  80 |  |  |
| 80 ≤ age ≤100 |  |  |

(2)

(b) Hence, calculate an estimate of the mean age.

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(4)

(Total 6 marks)

7. The heights in cm of the members of 4 volleyball teams A, B, C and D were taken and represented in the frequency histograms given below.



The mean  and standard deviation ** of each team are shown in the following table.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | I | II | III | IV |
|  | 194 | 189 | 188 | 195 |
| ** | 6.50 | 4.91 | 3.90 | 3.74 |

Match each pair of  and  (I, II, III, or IV) to the correct team (A, B, C or D).

|  |  |
| --- | --- |
| and ** | Team |
| I |  |
| II |  |
| III |  |
| IV |  |

(Total 6 marks)