1. The following table is a frequency distribution of the lifetimes of 400 radio tubes tested at the ABC Tube company.

Lifetime (hours)	Number of tubes
300 – 399	14
400 – 499	46
500 – 599	58
600 – 699	76
700 – 799	68
800 – 899	62
900 – 999	48
1000 – 1099	22
1100 – 1199	6

With reference to this table determine the
a) upper limit of the fifth class,
b) lower limit of the eighth class,
c) class mark of the seventh class,
d) class boundaries of the last class,
e) class interval size,
f) frequency of the fourth class,
g) relative frequency of the sixth class,
h) percentage of tubes with lifetimes greater than or equal to 900 hours,
i) percentage of tubes whose lifetimes are at least 500 but less than 1000 hours.

2. Using the figures given below, calculate
a) the range, 64
b) the mean, 34
c) the median, 36
d) the first quartile, 16
e) the third quartile, 52
f) the quartile deviation, 18
g) the standard deviation. 19.63

2, 5, 7, 8, 11, 15, 17, 18, 22, 26, 30, 32, 36, 39, 40, 43, 45, 47, 51, 53, 55, 58, 60, 64, 66

3. From the following table, calculate the median, mode and standard deviation.

Variable	6.0	6.2	6.4	6.6	6.8	7.0	7.2	7.4	7.6	7.8	8.0
Frequency	1	1	1	5	20	31	25	10	3	2	1

4. The following table gives the frequency distribution of the times taken in minutes by all 90 clerks to fill up a case record summary.

Time taken (min)	0 – <4	4 – <8	8 – <12	12 –<16	16 – <20	20 – <24	24 –<28
Number of clerks	2	3	5	10	15	30	25

a) Calculate the mean time to complete a summary.
b) Calculate the variance and standard deviation of the time.
c) Calculate the median, the lower and upper quartile. Interpret each value. 21.33
d) Find and interpret the quartile deviation.
e) Construct a " less than " cumulative frequency polygon and from it estimate the
   i) median,
   ii) the percentage of the clerks who took
      1) more than 21 minutes,
      2) less than 15 minutes.

f) Construct histogram showing the distribution of times and estimate the mode from the histogram.

5 An industrial psychologist asked all 25 managers to take a written examination designed to measure the manager's work satisfaction. The following data were obtained (higher scores indicate a higher level of satisfaction).

75	68	33	69	26	62	77	54	61	96	87	57	61
56	79	78	67	78	68	75	28	89	61	51	41	

a) Group the data into eight classes: 21 – 30, 31 – 40, ..., 91 – 100.
b) Use the grouped data to estimate the mean and the standard deviation.
c) Use the grouped data to calculate the median and the mode.
d) Construct a relative frequency distribution.
e) Construct a less than cumulative frequency distribution and draw a less than cumulative frequency polygon.
f) Use the a less than cumulative frequency polygon in part (e) to find
   i) the semi-interquartile range,
   ii) the percentage of managers who scored more than 70 marks.