SM-4331 Exercise 1

1. The following data represents the heights of 16 students in centimetres.

162	168	177	147	189	171	173	168
178	184	165	173	179	166	168	165

   (a) Using the raw data, find the sample mean and sample standard deviation.

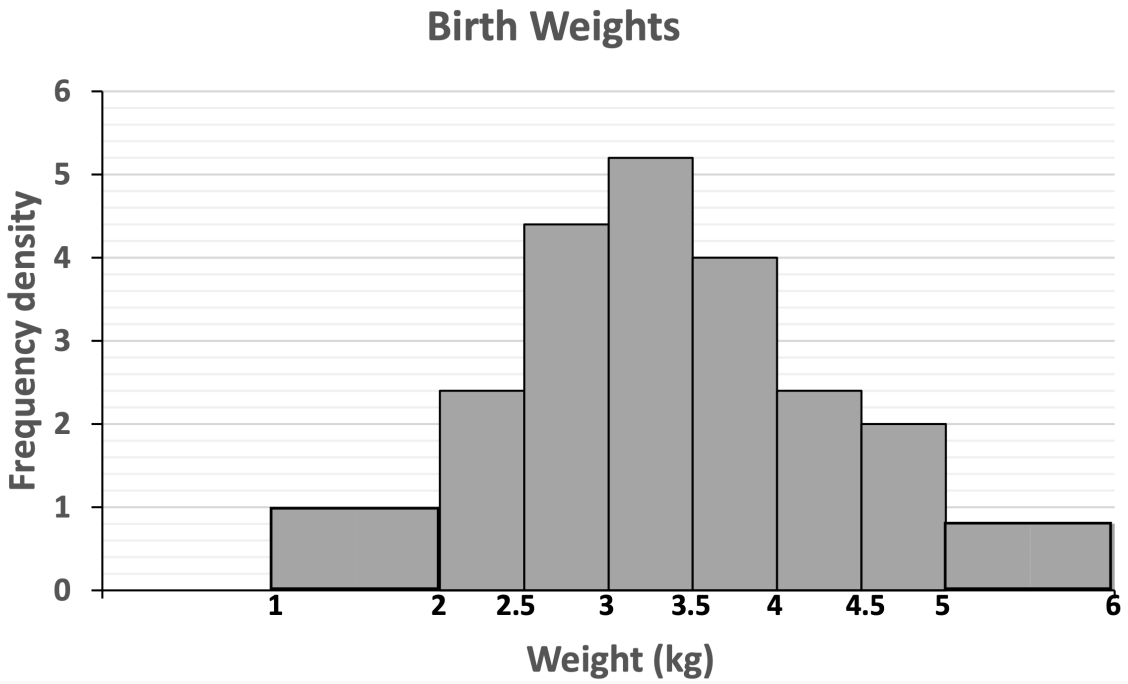
   (b) Using equal class interval widths of 10, tabulate the data by dividing it into 5 classes (i.e. groups) between 140 cm and 190 cm.

   (c) Draw a histogram for the data.

   (d) Identify the modal class.

   (e) Using the grouped data in (b), find the sample mean and sample standard deviation. Compare with the answers obtained in (a) and comment.

2. The following histogram represents the weights of 60 babies:



   6 babies weigh from 4 to 5 kg. Calculate the number of babies weighing less than 3 kg.

3. A factory producing batteries is interested in finding out the number of hours their batteries lasted. The data from the experiment on the time batteries lasted is represented in the table below:

   (a) Draw a cumulative frequency curve.

   (b) From the cumulative frequency curve in (a), obtain

      i. an estimate of the median.

Battery life (t hours)	Frequency
$0.0 \leq t < 1.0$	5
$1.0 \leq t < 1.5$	12
$1.5 \leq t < 2.0$	32
$2.0 \leq t < 2.5$	40
$2.5 \leq t < 3.0$	16
$3.0 \leq t < 4.0$	9
$4.0 \leq t < 5$	6

ii. an estimate of the lower and upper quartile.

(c) Calculate an estimate of the interquartile range and interpret the data.

4. A student obtained the following marks (in percentage) for their assignments over the course of a year in their studies.

Geography	56	49	63	58	52	50	57	61	
English	61	70	53	60	57	52	48	79	65
Science	68	56	58	73	39	47	55	76	
Mathematics	45	46	42	48	40	45	44	41	47

(a) Find, for each subject, the range and interquartile range.

(b) Which subject is the student most "consistent" in? Explain your answer.

(c) What is the student's "best" subject? Explain your answer.

5. The height of a group of students is distributed as in the table below:

Height (cm)	151-155	156-160	161-165	166-170	171-175
Frequency	6	9	14	23	8

(a) Would you categorise the data as discrete or continuous? Explain your reasoning.

(b) Based on your answer to (a), what do the class boundaries mean?

(c) Draw a cumulative frequency curve for the data.

(d) Use the cumulative curve to obtain an estimate for the interquartile range.

(e) Estimate the height of the tallest 10% of students.

(f) Estimate the mean height and standard deviation.