1. The table shows some information about the foot lengths of 40 adults.

Foot length (f cm)	Number of adults
$16 \leqslant f < 18$	3
$18 \leqslant f < 20$	6
$20 \leqslant f < 22$	10
$22 \leqslant f < 24$	12
$24 \leqslant f < 26$	9
Total:	40

working out midpoint

$\frac{16+18}{2} = \frac{34}{2} = 17$

use same method to find midpoint for rest of the class intervals

frequency (f)

midpoints

x	fx (1)
17	$3 \times 17 = 51$
19	$6 \times 19 = 114$
21	$10 \times 21 = 210$
23	$12 \times 23 = 276$
25	$9 \times 25 = 225$
	876

add up all of fx

(a) Write down the modal class interval.

The highest frequency

$22 \leqslant f < 24$ (1)

total number of adults

(1)

(b) Calculate an estimate for the mean foot length. (1)

$\text{estimate mean} = \frac{\text{total } fx}{\text{total } f} = \frac{876}{40} = 21.9$

21.9 (1) cm

(3)

2. There are 10 boys and 20 girls in a class.
The class has a test.

The mean mark for all the class is 60
The mean mark for the girls is 54

Work out the mean mark for the boys.

mean = sum of values / number of values

class: $60 = \frac{\text{sum of values}}{10 + 20}$ sum of values: $60 \times 30 = 1800$ (1)

girls: $54 = \frac{\text{sum of values}}{20}$ sum of values: $54 \times 20 = 1080$

boys: $1800 - 1080 = 720$ (1)

$\text{mean} = \frac{\text{sum}}{\text{number}} = \frac{720}{10} = 72.$

Answer = 72. (1)

72

(Total for Question is 3 marks)

3. A bus company recorded the ages, in years, of the people on coach A and the people on coach B.

Here are the ages of the 23 people on coach A. $n = 23$

41	42	44	48	52	53	53	53	56	57	57	59
60	61	63	64	64	66	67	69	74	77	79	

(a) Complete the table below to show information about the ages of the people on coach A.

Median	59
Lower quartile	53
Upper quartile	66
Least age	41
Greatest age	79

$\frac{n+1}{4} = 6^{th}$ position ← Lower quartile

Median → $\frac{n+1}{2} = 12^{th}$ position.

Upper quartile → $\frac{3(n+1)}{4} = 18^{th}$ position.

(1) (1)

(2)

Here is some information about the ages of the people on coach B.

Median	70
Lower quartile	54
Upper quartile	73
Least age	42
Greatest age	85

Richard says that the people on coach A are younger than the people on coach B.

(b) Is Richard correct?
You must give a reason for your answer.

Yes, because the median for coach A is less than the median for coach B ($59 < 70$). ∴ the people on coach A are younger.

(1)

(1)

Richard says that the people on coach A vary more in age than the people on coach B.

(c) Is Richard correct? Range = largest − smallest
You must give a reason for your answer.

Range of A = 79 − 41 = 38. Range of B = 85 − 42 = 43.

Range of A is less than range of B (38 < 43) ∴ Richard is not correct. (1)

(1)

(Total for Question is 4 marks)

4. 4 red bricks have a mean weight of 5 kg.
5 blue bricks have a mean weight of 9 kg.
1 green brick has a weight of 6 kg.

Donna says,

"The mean weight of the 10 bricks is less than 7 kg."

Is Donna correct?
You must show how you get your answer.

mean = $\frac{\text{total}}{\text{number of values}}$ $\Rightarrow$ total = mean x number of values

(1)

Red bricks: Total = 5x4 = 20kg
Blue bricks: Total = 9x5 = 45kg
Green bricks: Total = 6x1 = 6kg

Total weight for 10 bricks
↳ 20+45+6 = 71 kg (1)

∴ mean weight of 10 bricks
= $\frac{71}{10}$ = 7.1 kg (1)

So No Donna is incorrect since 7.1 > 7