Use black ink or ball-point pen.
Fill in the boxes at the top of this page with your name, centre number and candidate number.
Answer all questions.
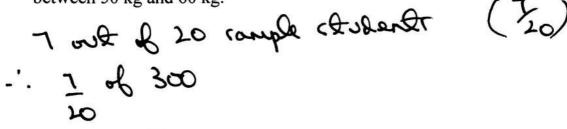Answer the questions in the spaces provided – there may be more space than you need.
Calculators may be used.

Information

$80 \le w < 90$	2

There are 300 students in Year 11.

Work out an estimate for the number of students in Year 11 whose weight is between 50 kg and 60 kg.

7 out of 20 sample students $\left(\frac{7}{20}\right)$

∴ $\frac{7}{20}$ of 300

$= \frac{7}{20} \times 300^{15} = 105$

..................105..................

(Total 3 marks)

2. The table shows the number of students in each year group at a school.

4. There are three age groups in a competition.
The table shows the number of competitors in each age group.

16-18 years	19-24 years	25+ years
120	250	200

570 total

John wants to do a survey of the competitors.
He uses a stratified sample of exactly 50 competitors according to each age group.

Work out the number of competitors in each age group that should be in his stratified
sample of 50.

16-18.

$$\frac{120}{570} \times 50 = 10.53 = 11$$

19-24.

$$\frac{250}{570} \times 50 = 21.93 = 22$$

25+

$$\frac{200}{570} \times 50 = 17.54 = 18 \quad (17)$$

$$\begin{array}{r} 11 \\ 22 \\ 18 + \\ \hline 51 \end{array}$$

reduce by 1.
(could reduce
in any group)

16-18 years: ....11..........

19-24 years: ....22..........

25+ years: ....17..........

(Total 3 marks)

Year group	Number of boys	Number of girls
7	100	100
8	150	50
9	100	100
10	50	150
11	100	100
Total	500	500

Azez took a stratified sample of 50 girls, by ye

Work out the number of Year 8 girls in his sam

$$\frac{50}{500} \times 50 = 5$$

The table gives information about the number
of a college course.

	Male

Male	45	52	26
Female	25	48	62

258 total

A sample, stratified by the language studied and by gender, of 50 of the 258 students is taken.

(a) Work out the number of male students studying Spanish in the sample.

$$\frac{26}{258} \times 50 = 5.04$$

..............5..............

(2)

(b) Work out the number of female students in the sample.

Female $= \begin{array}{r} 25 + \\ 48 \\ 62 \\ \hline 135 \end{array}$

..............26..............

(2)
(Total 4 marks)

$$\frac{135}{258} \times 50 = 26.16$$

18 to 30	82	21
31 to 50	147	45
Over 50	91	29

Carol tells Hamid that his survey will be biased.

(i) Give **one** reason why the survey will be biased.

People using the sports centre will have particular opinion. Hamid should survey in other locations.

(ii) Describe **one** change Hamid could make to the way in which he is going to carry out his survey so that it will be less biased.

He should survey every day of the week.

Year 7	104	71	175
Year 8	94	98	192
Year 9	80	120	200
Total	278	289	567

School	A	B	C	D	Total
Number of girls	126	82	201	52	461

Jenny did a survey of these girls.
She used a stratified sample of exactly 80 girls according to school.

Work out the number of girls from each school that were in her sample of 80.
Complete the table.

School	A	B	C	D	Total
Number of girls	22	14	35	9	80

A. $\frac{126}{461} \times 80 = 22$

C. $\frac{201}{461} \times 80 = 35$

B. $\frac{52}{461} \times 80 = 14$

D. $\frac{52}{461} \times 80 = 9$

$$\begin{array}{r} 22 + \\ 14 \\ 35 \\ 9 \\ \hline 80 \end{array}$$

(Total 3 marks)

14. The table shows the number of boys in each of four groups.

Group	A	B	C	D	Total
Number of boys	32	43	38	19	132

Jamie takes a sample of 40 boys stratified by group.

Calculate the number of boys from group B that should be in his sample.

$\frac{43}{132} \times 40 = 13.03$

.... 13 ....
(Total 2 marks)

2 ......Melanie should't ask only women........................

....

....

16. The two-way table shows information about the number of students in a school.

	Year Group					Total
7	8	9	10	11		