Applied Transition Maths task: MUST do all the 20 questions

Question 1

Here are 9 numbers:

27 19 20 32 21 29 20 24 33

Find the mean of these numbers.

..... **(3 marks)**

Question 2

What value of x makes the mean of the first three numbers in this list equal to the mean of the last four?

15 5 x 7 9 17

$x =$ .....

Question 3

This list represents four numbers.

$127 \quad x \quad x+1 \quad 2x$

The mean of the four numbers is 180.

Work out the numbers.
Write all four numbers in a list separated by commas.

..... **(5 marks)**

Question 4

The table shows the number of children in 20 households.

Number of children	Frequency
0	4
1	4
2	7
3	3
4	2

Work out the mean number of children per household. ..... **(3 marks)**

Question 5

A shop records the time taken by its customers to complete a purchase on its website.
The results from one day are summarised in this table.

Time taken (t minutes)	Number of customers		
$0 < t \leqslant 3$	6		
$3 < t \leqslant 6$	10		
$6 < t \leqslant 9$	6		
$9 < t \leqslant 12$	2		
$12 < t \leqslant 15$	1		

Calculate an estimate of the mean time taken.

..... minutes **(4 marks)**

Question 6

There are four possible results from a music examination.

Result	**Fail**	**Pass**	**Credit**	**Distinction**
Probability		$\frac{1}{2}$	$\frac{3}{10}$	$\frac{1}{20}$

What is the probability of a fail?

$\frac{\square}{\square}$ **(2 marks)**

Question 7

A box contains a number of packets of crisps of different flavours.
A packet of crisps is taken at random from the box.
Some of the probabilities of taking each flavour are shown in the table below.

Calculate the probability that the crisps are not Vinegar flavour.

Flavour	Cheese	Vinegar	Bacon	Sausage	Beef
Probability	0.3	0.12		0.25	0.05

..... **(1 mark)**

Question 8 The two-way table gives some information about how 100 children travelled to school one day. Complete the two-way table.

	Walk	Car	Other	Total
Boy	15		14	54
Girl		8	16	
Total	37			100

(3 marks)

Question 9

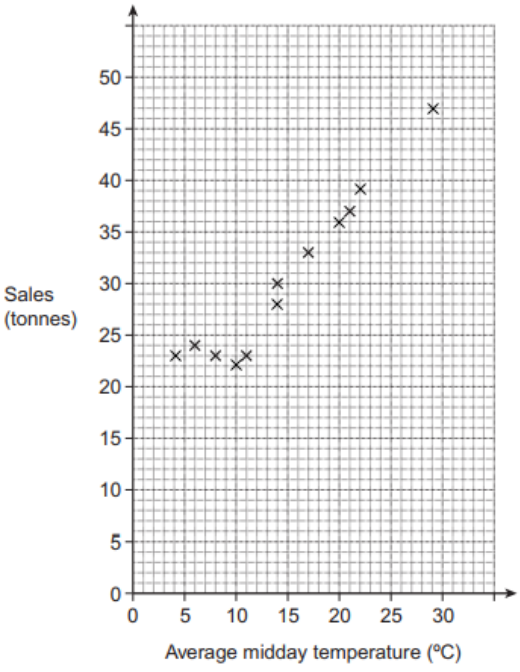
100 adults were asked how they keep fit. Each adult goes to the gym or runs or cycles.

45 of these adults are female.
30 of the 52 adults who go to the gym are female.
35 adults run.
9 males cycle.

How many females run? ..... **(3 marks)**

Question 10

A company sells ice cream.
The average midday temperature and the sales for each month in 2011 are shown.



In July 2012, the average midday temperature is predicted to be 25 ºC.

Use the graph to estimate the sales of ice cream in July 2012.

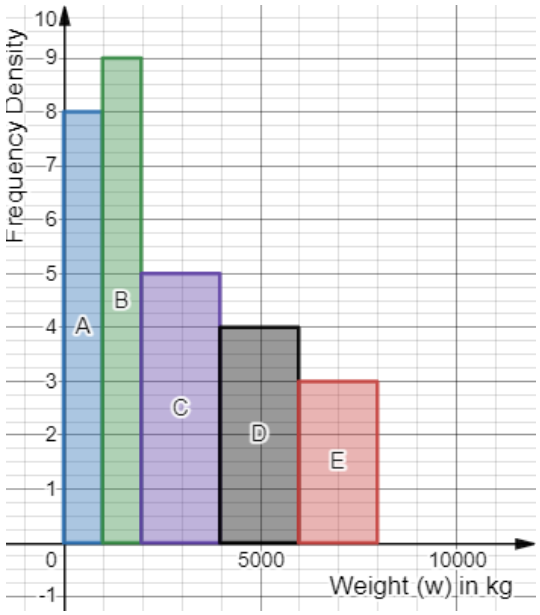
..... tonnes **(2 marks)**

Question 11

The incomplete histogram and table show information about the weights of some containers.

Weight (w) in kg	Frequency
$0 < w \leqslant 1000$	16
$1000 < w \leqslant 2000$	
$2000 < w \leqslant 4000$	
$4000 < w \leqslant 6000$	16
$6000 < w \leqslant 8000$	
$8000 < w \leqslant 12000$	8

(b) Use the information in the table to complete the histogram.



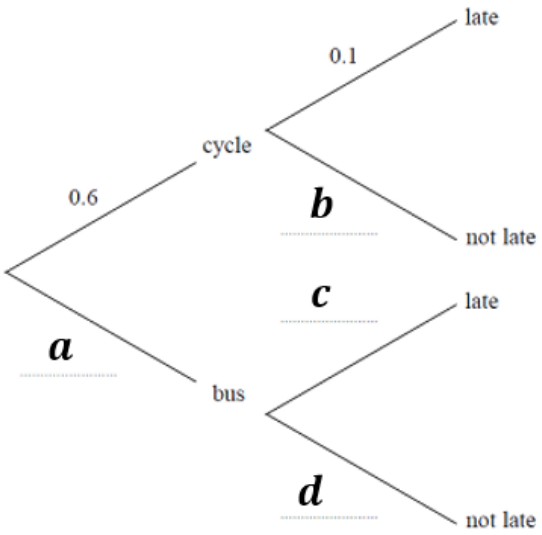
(2 marks)

Question 12

Chad either cycles to work or goes by bus.

On any day that he goes to work, the probability that he cycles is 0.6.
When he cycles, the probability that he is late is 0.1.
When he goes by bus, the probability that he is late is 0.3.

Complete the probability tree diagram.



$a =$ .....

$b =$ .....

$c =$ .....

$d =$ .....

(2 marks)

Question 13

An activity camp has climbing and sailing classes.

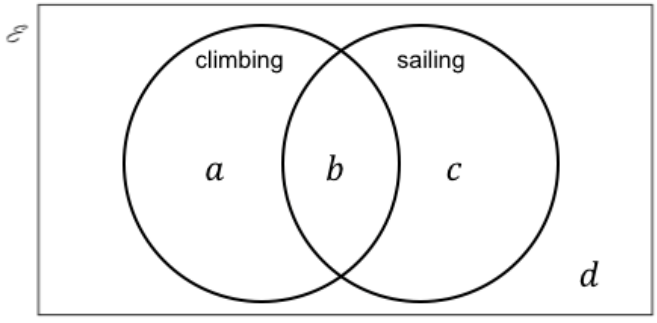
50 children attend the activity camp.

35 children do climbing.

10 children do both classes.

2 children do neither class.

The Venn diagram below represents this information.



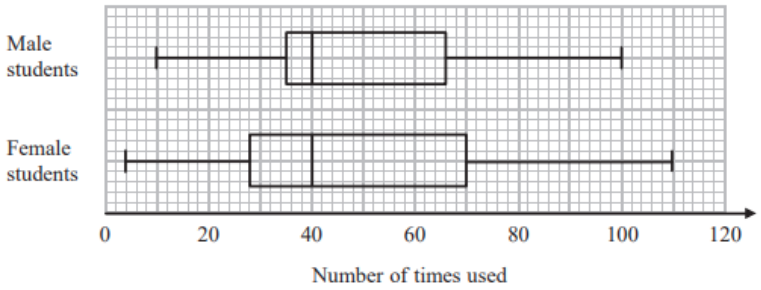
A child attending the activity camp is selected at random.

Find the probability that this child did sailing, given that they did not do climbing.

..... **(2 marks)**

Question 14

Some students were asked how many times they each used their mobile phones last week. The box plots give information about the male students' answers and about the female students' answers.



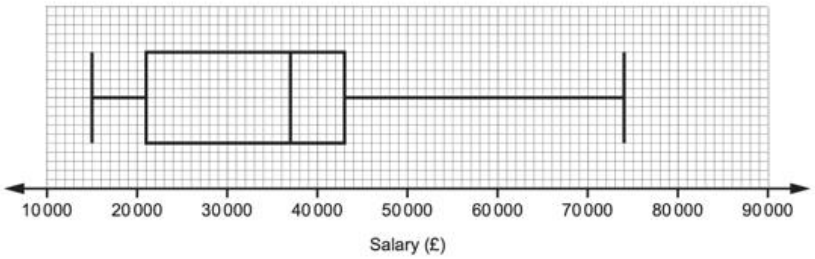
Compare the two distributions represented by the box plots.

	Male	Female
Median		
Range		

(3 marks)

Question 15

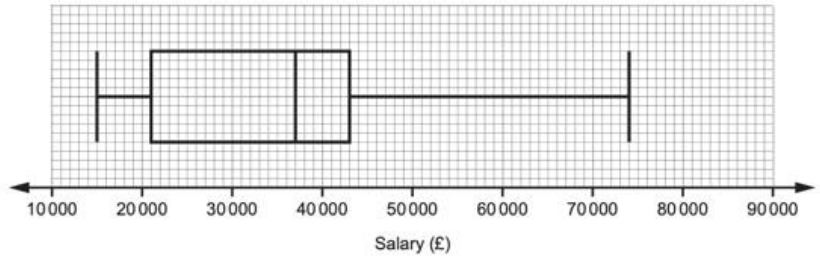
The box plot shows the distribution of the salaries for the workers at Bexbridge Biscuits.



State the median salary.

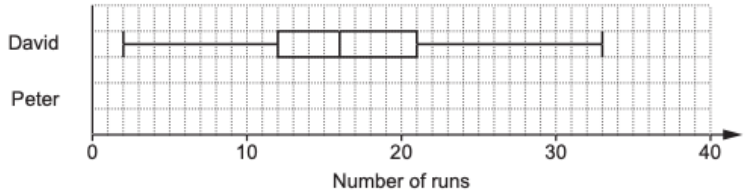
£ ..... **(1 mark)**

Question 16 The box plot shows the distribution of the salaries for the workers at Bexbridge Biscuits.



Find the interquartile range. £ ..... **(2 marks)**

Question 17 The box plot shows the distribution of the runs scored by David in some cricket matches.



Another player, Peter, has
- a median score of 26
- a highest score of 39
- a lowest score of 8
- a lower quartile of 14
- an inter-quartile range of 18. Draw the boxplot for Peter.

Whose scores were more consistent? Explain your answer.

David [ ]

Peter [ ] **(3 mark)**

Question 18

The table shows information about the ages, in years, of 300 students.

Age (years)	11	12	13	14	15	16
Number of students	41	40	50	48	53	68

Ian takes a sample of 50 of these students, stratified by age.

Calculate the number of 16 year old students he should have in his sample.

..... **(2 marks)**

Question 19

A school has 450 students.
Each student studies one of Greek or Spanish or German or French.
The table shows the number of students who study each of these languages.

Language	Number of students
Greek	45
Spanish	121
German	98
French	186

An inspector wants to look at the work of a stratified sample of 70 of these students.

Find the number of students studying each of these languages that should be in the sample.

Greek .....

Spanish .....

German .....

French .....

Question 20

Shirley wants to find an estimate for the number of bees in her hive.

On Monday she catches 90 of the bees.
She puts a mark on each bee and returns them to her hive.

On Tuesday she catches 120 of the bees.
She finds that 20 of these bees have been marked.

Work out an estimate for the total number of bees in her hive.

..... **(3 marks)**