YEAR 10 STATISTICS EXAM QUESTIONS

1.

The student scores on Mrs. Frederick's mathematics test are shown on the stem-and-leaf plot below.

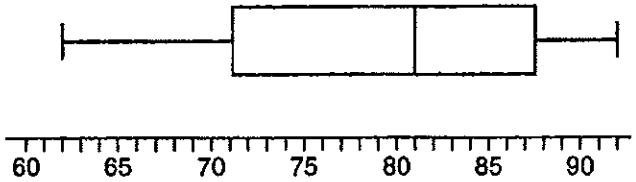
4	3
6	0 5 5 7 9
7	2 5 6 8 9 9 9
9	0 1 2 5 9

Key: 4 | 3 = 43 points

Find the median of these scores.

2.

The accompanying diagram shows a box-and-whisker plot of student test scores on last year's Mathematics A midterm examination.



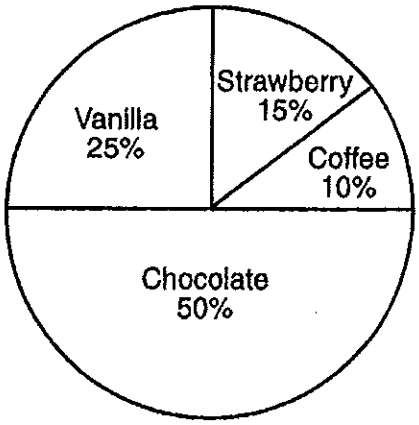
What is the median score?

(1) 62
(2) 71
(3) 81
(4) 92

3.

Mr. Smith's class voted on their favorite ice cream flavors, and the results are shown in the accompanying diagram. If there are 20 students in Mr. Smith's class, how many students chose coffee ice cream as their favorite flavor?

Favorite Ice Cream Flavors

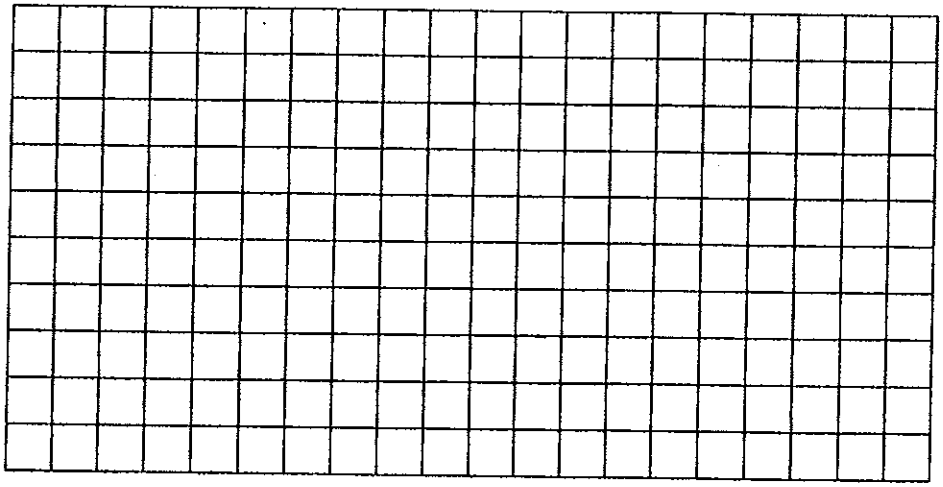


4.

Sarah's mathematics grades for one marking period were 85, 72, 97, 81, 77, 93, 100, 75, 86, 70, 96, and 80.

a Complete the tally sheet and frequency table below, and construct and label a frequency histogram for Sarah's grades using the accompanying grid.

Interval (grades)	**Tally**	**Frequency**
61–70		
71–80		
81–90		
91–100		



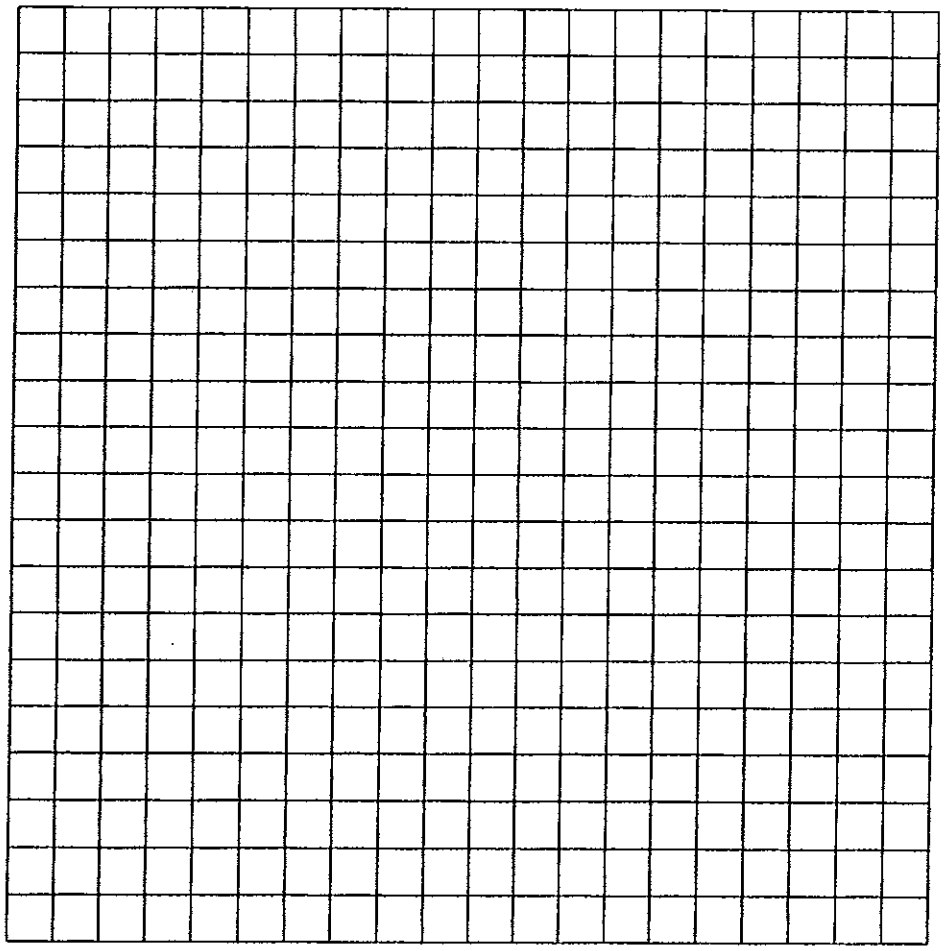
5.

The following data consists of the weights, in pounds, of 30 adults:

195, 206, 100, 98, 150, 210, 195, 106, 195, 168, 180, 212, 104, 195, 100,
216, 195, 209, 112, 99, 206, 116, 195, 100, 142, 100, 135, 98, 160, 155

Using the data, complete the accompanying cumulative frequency table and construct a cumulative frequency histogram on the grid below.

Interval	Frequency	Cumulative Frequency
51–100		
101–150		
151–200		
201–250		

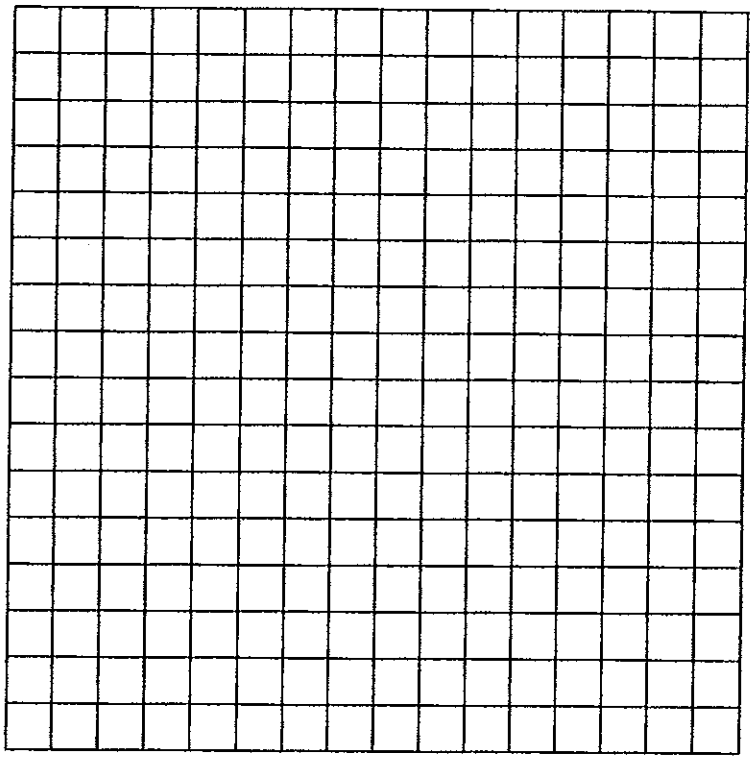


6.

On a science quiz, 20 students received the following scores: 100, 95, 95, 90, 85, 85, 85, 80, 80, 80, 80, 75, 75, 75, 70, 70, 65, 65, 60, 55.

Construct a statistical graph, such as a histogram or a stem-and-leaf plot, to display this data. [*Be sure to title the graph and label all axes or parts used.*]

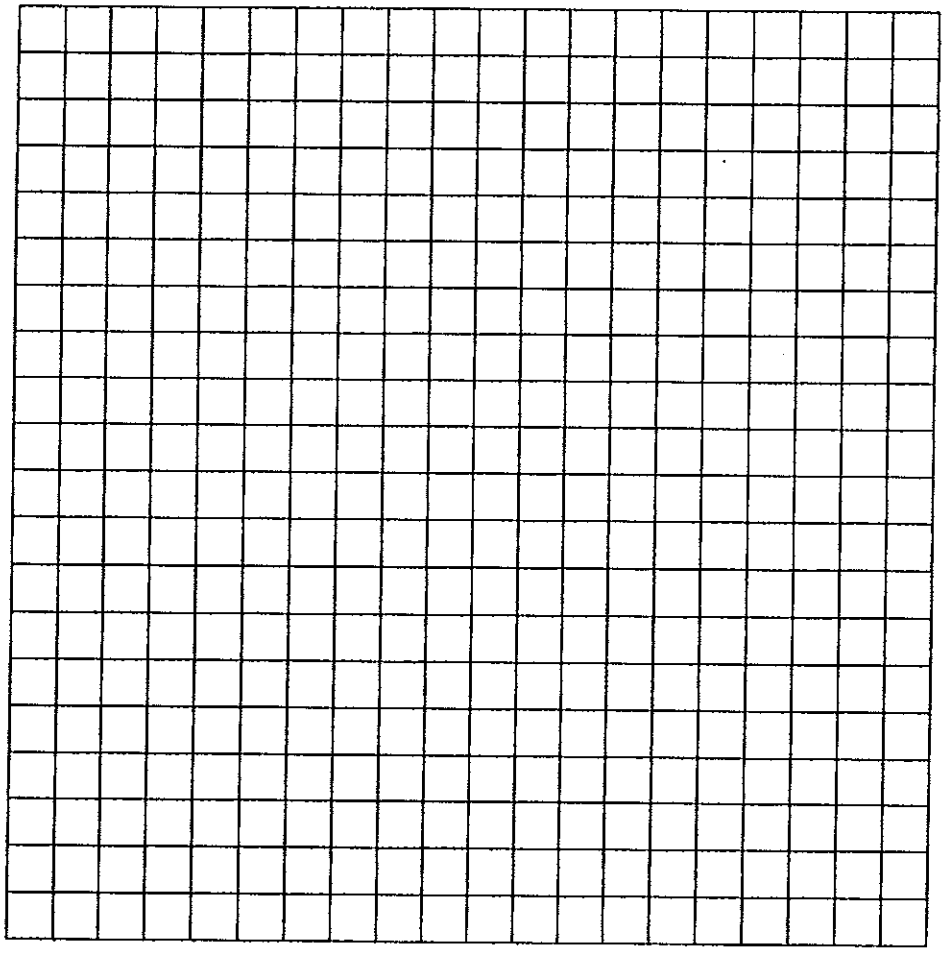
If your type of plot requires a grid, show your work here.



7.

The scores on a mathematics test were 70, 55, 61, 80, 85, 72, 65, 40, 74, 68, and 84. Complete the accompanying table, and use the table to construct a frequency histogram for these scores.

Score	Tally	Frequency
40–49		
50–59		
60–69		
70–79		
80–89		



8.

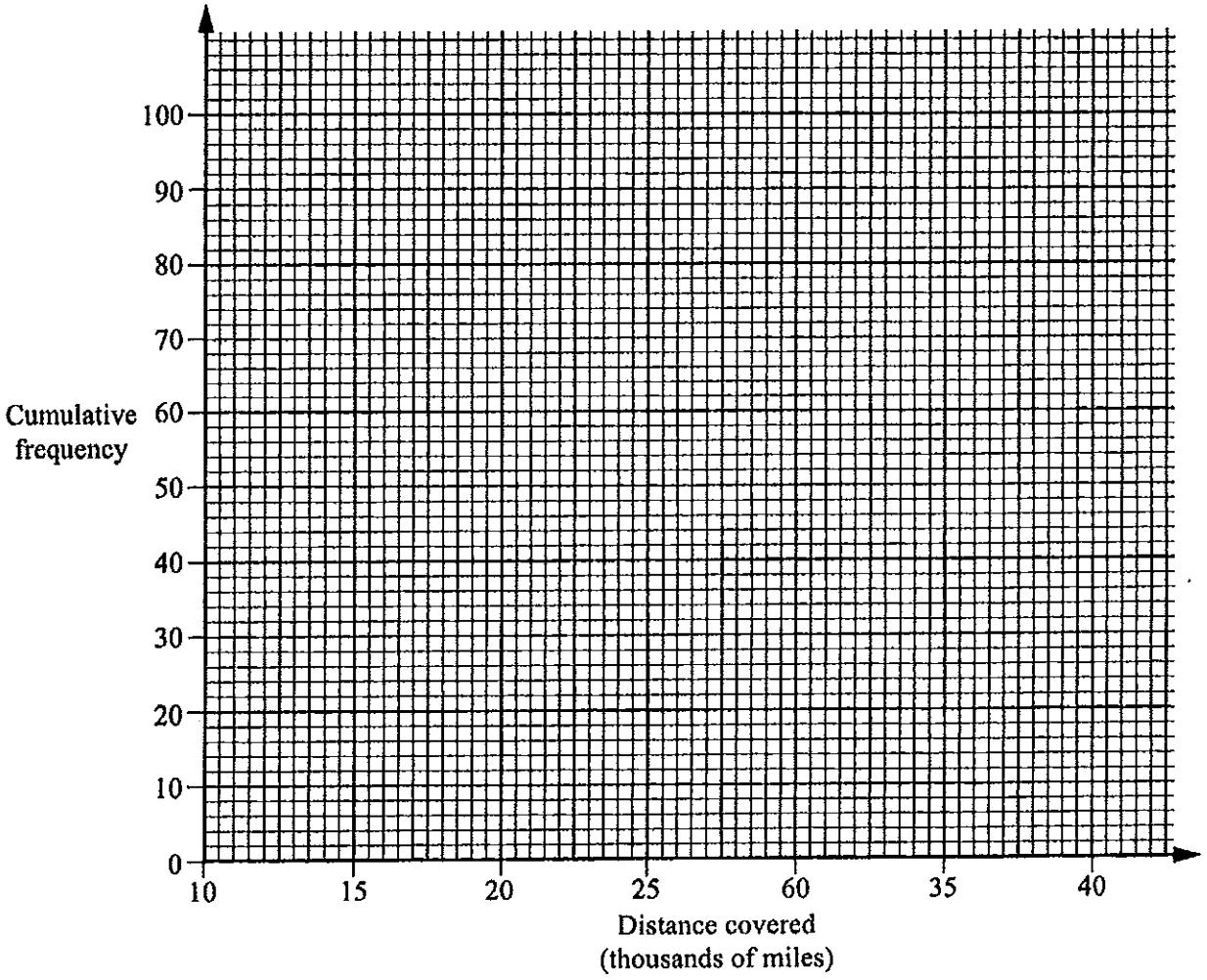
A manufacturer investigates how far a car travels before it needs new tyres.
The distances covered by 100 cars before they needed new tyres is shown in the table below.

Distance covered (x thousands of miles)	Number of cars
$10 < x < 15$	10
$15 < x < 20$	23
$20 < x < 25$	31
$25 < x < 30$	19
$30 < x < 35$	12
$35 < x < 40$	5

(a) Complete the cumulative frequency table for 100 cars.

Distance covered (x thousand miles)	$x < 15$	$x < 20$	$x < 25$	$x < 30$	$x < 35$	$x < 40$
Cumulative Frequency	10					

(b) Draw the cumulative frequency diagram on the grid below.



(c) Use your cumulative frequency diagram to estimate the median distance covered.

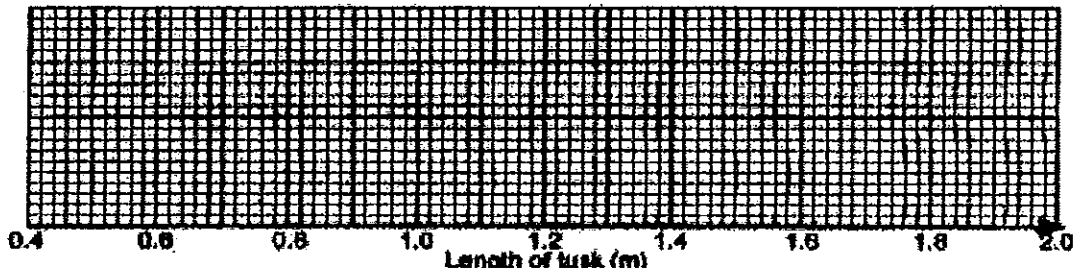
_____ miles

(d) Use the diagram to estimate how many cars traveled less than 28000 miles before needing new tyres.

_____

9.

A game warden measured seven elephant tusks seized in a raid on a poachers' camp.
The lengths in metres were 0.83, 1.22, 1.87, 1.45, 1.02, 1.33, 1.61.
On the grid below draw a box plot to show these data. [



10.

The following are marks scored by pupils in a class on a test (out of 20):

9, 17, 18, 12, 14, 13, 12, 15, 6, 13, 12, 10, 14, 13, 17

(a) Calculate the mean and standard deviation of the scores.

Another class had a mean of 13 and standard deviation of 1.5.

(b) Compare and contrast the performances of the two classes.

11.

The speeds of cars along a residential road were checked one evening and the results are shown in the table below:

Speed (mph)	*Frequency*
0 - 10	6
11 - 20	21
21 - 30	67
31 - 40	84
41 - 50	17
51 - 60	5
more than 60	0

(a) Complete a *cumulative* frequency table for these data.

(b) On a grid, draw a cumulative frequency graph.

(c) Use your graph to estimate:

(i) the median speed,

(ii) the interquartile range,

(iii) the percentage of cars travelling at more than 45 mph.

12.

The scores obtained by 20 pupils in a maths test were:

56, 47, 92, 65, 72, 58, 74, 62, 60, 83

34, 59, 67, 54, 75, 90, 82, 43, 65, 62

(a) Calculate the mean and standard deviation of these scores.

The Head of Department decided that the test was too easy, and so decreased each score by 10 marks.

(b) *Write down*, for the new set of scores,

(i) the mean,

(ii) the standard deviation.

ANSWERS TO STATISTICS TEST:

(1) 76 (2) 81 (3) 2 students

(4) Freq: 1, 4, 3, 4 Tutor to check histogram

(5) Cum. Freq: 6, 14, 24, 30. Tutor to check histogram

(6) Tutor to check histogram

(7) Freq: 1, 1, 3, 3, 3 Tutor to check histogram

(8) (a) 33, 64, 83, 95, 100 (c) 22.5 to 23.5 (d) 70 to 75

(10) (a) Mean = 13, S.D. = 3.06

(b) On average, the two classes are the same, but with a much smaller std., the second class is much more consistent; i.e. actual scores have less variation about the mean.

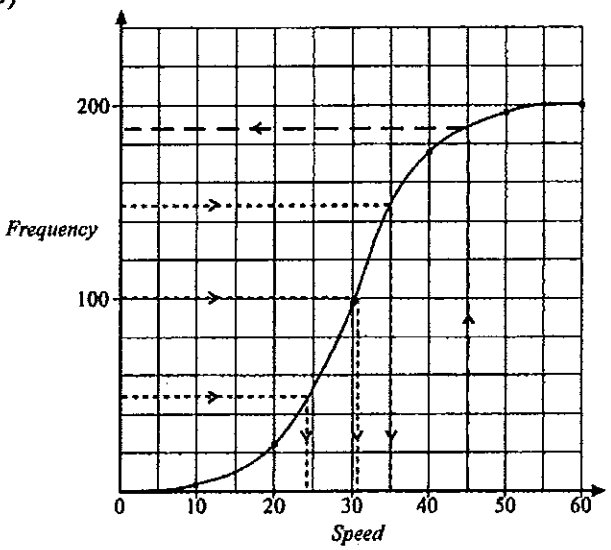
(11)

(a)

Speed	*Freq.*	*Cum. Fr.*
0 - 10	6	6
11 - 20	21	27
21 - 30	67	94
31 - 40	84	178
41 - 50	17	195
51 - 60	5	200

(one error – 1)

(b)



(c) (i) about 31 mph

(ii) 35 – 24 = 11 mph (approx)

(12) (a) Mean = 65 ; Std. Dev. = 14.66

(b) (i) 55 (ii) 14.66