Name: _____Date : _____

IM 2 UNIT TEST V1 – STATISTICS
Teacher: Mr. Santowski and Ms. Aschenbrenner

Score:_____

ALL QUESTIONS ARE CALCULATOR ACTIVE

1. The table below shows the frequency distribution of the number of dental fillings for a group of 250 American children.

Number of fillings	0	1	2	3	4	5
Frequency	40	30	50	q	40	10

a. Explain why the value of q is 80.

(2)

b. Is this data an example of discrete data or continuous data? Explain your reasoning.

(2)

c. Use your calculator to find:

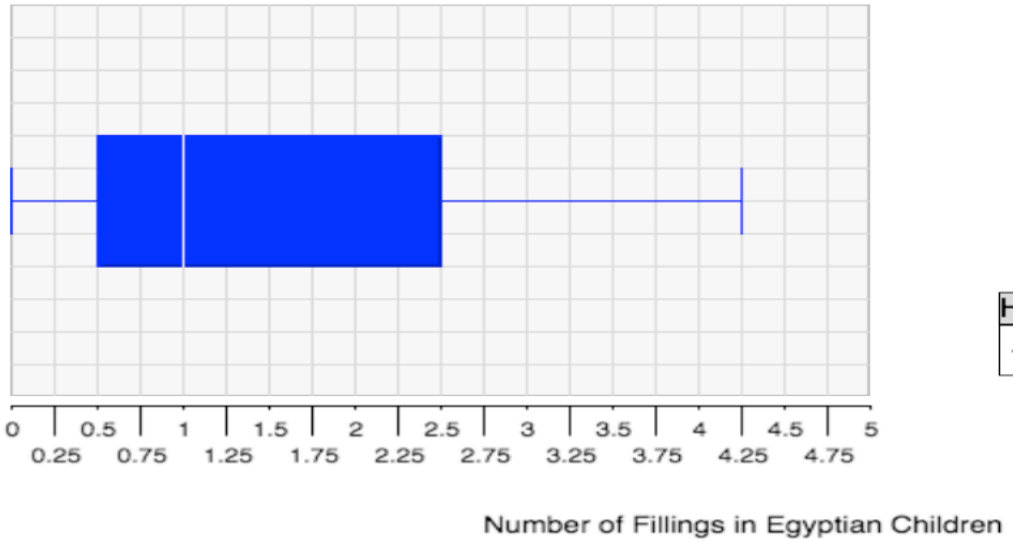
(i) the mean number of fillings (ii) the median number of fillings (iii) the mode number of fillings

(3)

1. (CONTINUED) The table below shows the frequency distribution of the number of dental fillings for a group of ***250 American children***.

Number of fillings	0	1	2	3	4	5
Frequency	40	30	50	*q*	40	10

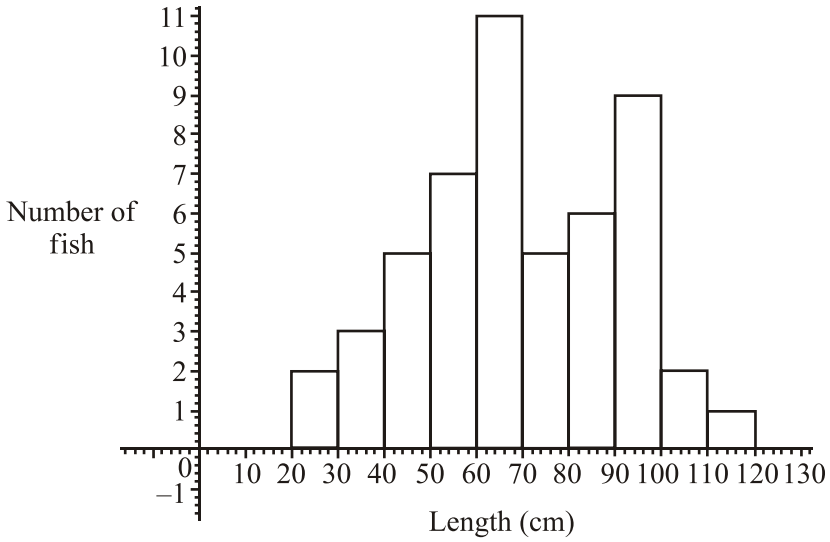
d. The following box and whisker plot showing statistical information about the number of dental fillings for a group of ***250 Egyptian children***.



List one thought/observation about the number of fillings in American and another one for the Egyptian children	List one question you may have about the data presented	Which group (American or Egyptian) seems to have more fillings? Explain your reasoning

(3)

2. The figure below shows the lengths in centimeters of fish found in the net of a small trawler.



a. Find the total number of fish in the net.

(2)

b. Find

i. the modal length interval;

ii. the interval containing the median length;

iii. an estimate of the mean length.

(5)

The fishing company must pay a fine if more than 10% of the catch have lengths less than 40cm.

c. Will the company be fined? Show your calculations to back up your answer.

(1)

3. Kelly scored the following on 5 science tests during second semester: 73%, 89%, 94%, 87%, 82%.

a. What is the next test score Kelly must get to have an 85% test average in science?

(2)

b. What is Kelly's maximum possible test average in science?

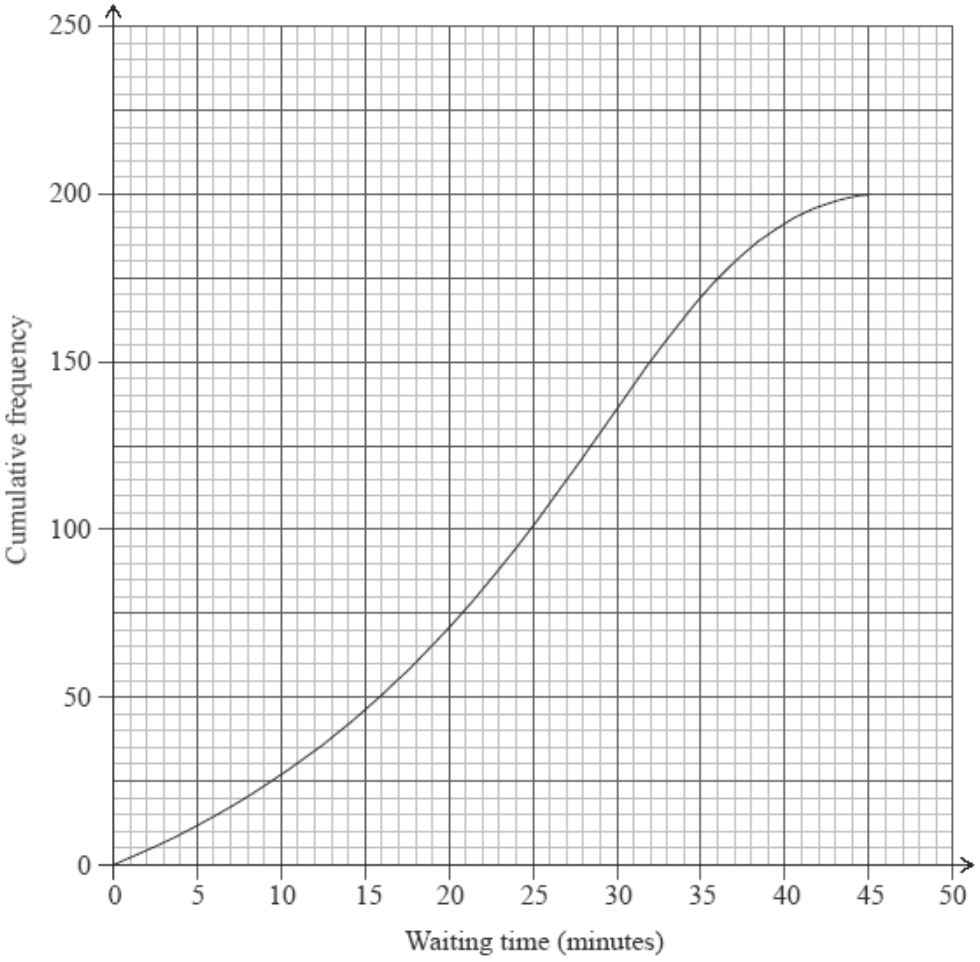
(2)

Let's say Kelly scored 95% on Test #6. Now Kelly's semester grade is 86.7%. In Science, the final exam is weighted 20% of the overall grade and the semester grades are weighted 80% of the overall grade. Kelly's personal goal for second semester is to earn **at least** a B+ in Science.

c. Is it possible for Kelly to get an A- (90%) in Science?

(2)

4. The cumulative frequency graph shows the amount of time in minutes, 200 students spend waiting for their train on a particular morning.



Use the graph to:

a. Write down the median waiting time.

(1)

b. Write down an estimate for Q1 and for Q3.

(2)

c. Find the percentage of students who waited for more than 37 minutes.

(2)

d. Find the value of m if 57.5% of the time students waited for less than m minutes.

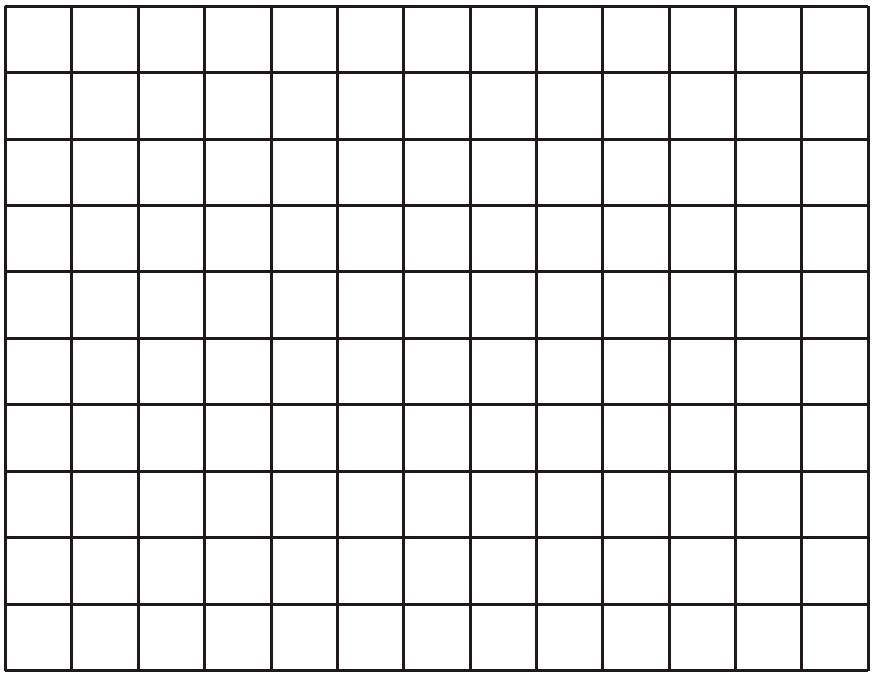
(2)

5. A random sample of 167 people who own mobile phones was used to collect data on the amount of time they spent per day using their phones. The results are displayed in the table below.

Time spent per day (t minutes)	$0 \le t < 15$	$15 \le t < 30$	$30 \le t < 45$	$45 \le t < 60$	$60 \le t < 75$	$75 \le t < 90$
Number of people	21	32	35	41	27	11

a. Draw a fully labeled histogram to represent the data.

(4)



b. State the modal group.

(1)

c. Use your calculator to calculate approximate values of the mean and median of the time spent per day on these mobile phones.

(2)

d. If there are 250,783 people in the town where the sample was taken, approximately how many people in this town spend at least 45 minutes on their mobile phones?

(3)

6. The local council has been monitoring the number of cars parked near a supermarket on an hourly basis. The results are displayed below.

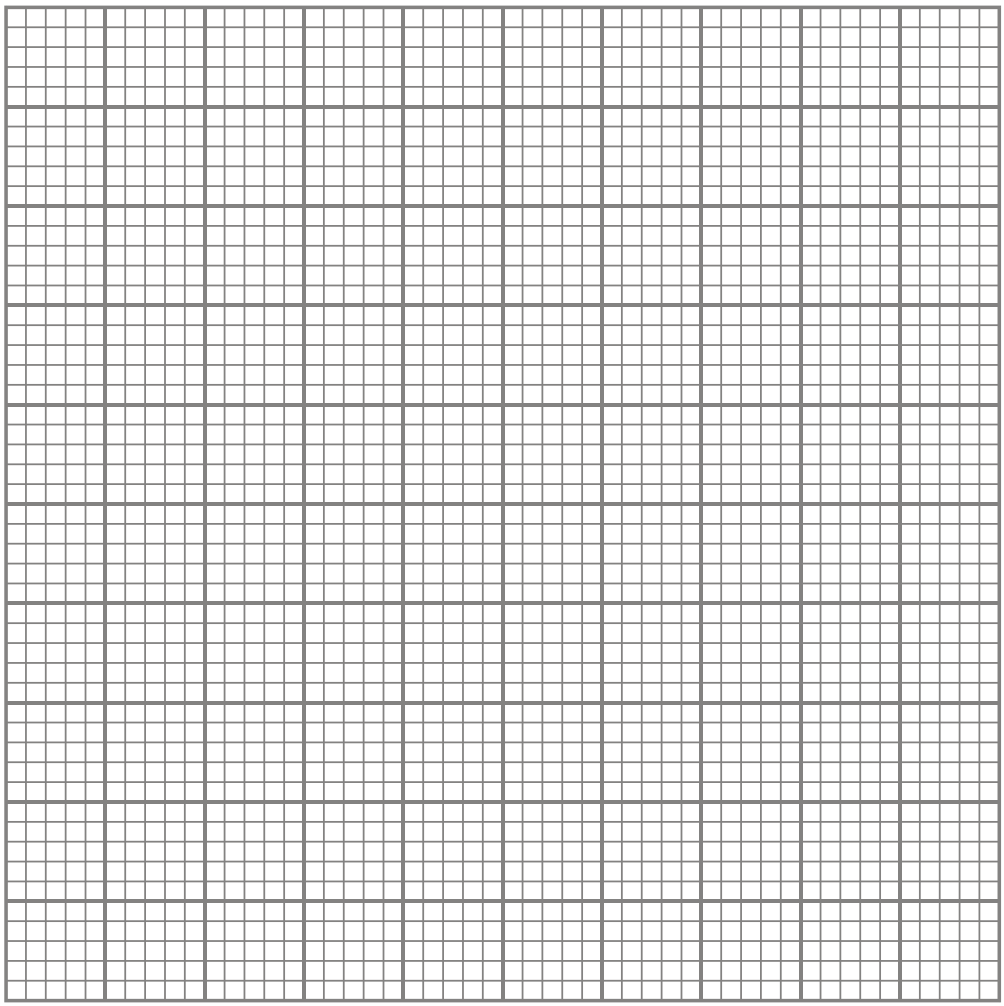
Parked Cars/Hour	Frequency	Cumulative Frequency
0–19	3	3
20–39	15	18
40–59	25	*w*
60–79	35	78
80–99	17	95

a. Write down the value of *w*.

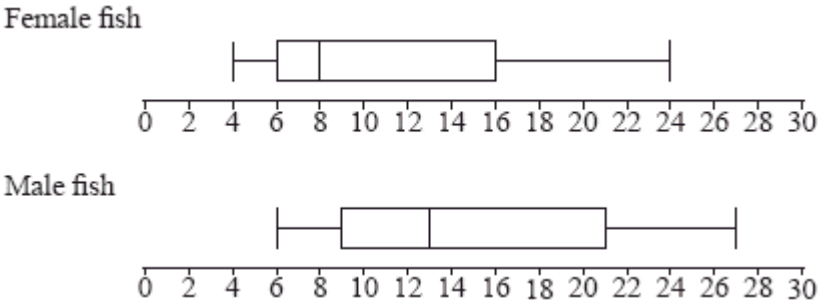
(1)

b. Draw and label the **Cumulative Frequency** graph for this data.

(4)



7. A scientist has 100 female fish and 100 male fish. She measures their lengths to the nearest cm. These are shown in the following box and whisker diagrams.



a. Write down the median length of the female fish.

(1)

b. Write down the median length of the male fish.

(1)

c. Find the interquartile range of the female fish.

(2)

d. Find the interquartile range of the male fish.

(2)

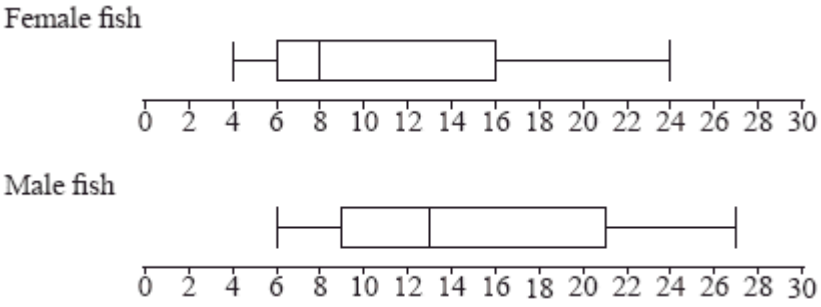
e. Make a conclusion about the lengths of female and male fish.

(2)

f. Find the range of the lengths of all 200 fish.

(2)

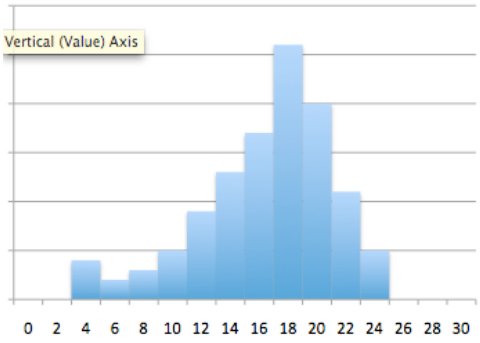
8. (CONTINUED) A scientist has 100 female fish and 100 male fish. She measures their lengths to the nearest cm. These are shown in the following box and whisker diagrams.



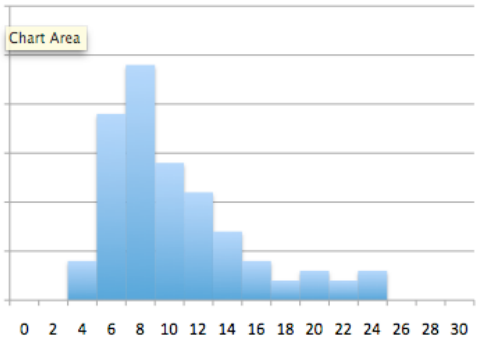
g. Here are three plots that COULD represent the box & whisker pots for the **female fish**. Select one and explain your reasoning.

(2)

PLOT (A)



PLOT (B)



PLOT (C)