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CW # 4: Math IB SL - Standard 22 - 25: Chapter 6 Review for Test

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1. *From January to September, the mean number of car accidents in a city per month was 420. From October to December, the mean was 740 accidents per month. Find the mean number of car accidents per month for the whole year.*

$$\frac{(9)(420)+3(740)}{12} = \frac{6000}{12} = \boxed{500}$$

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2. *On Monday, 23 students in a chemistry class spent a total of 736 minutes on an experiment.*

   a. *Find the mean number of minutes the students spent on the experiment.*

   b. *Two students forgot to report their times. One spent 24 minutes an the other spent 15 minutes. Calculate the new mean including these two students.*

(a) $\frac{736}{23} = \boxed{32 \text{ min}}$

(b) $\frac{736+24+15}{25} = \frac{775}{25} = \boxed{31 \text{ min}}$

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3. *A data set has a mean of 48 and a standard deviation of 5.*

   a. *Each value in the data set has 10 added to it. Find the new mean and standard deviation.*

   b. *Each value in the original data set is multiplied by 10. Find the new mean and variance*

(a) mean = 58
S.D. is still 5

(b) mean = 480
Variance = $50^2 = 2500$

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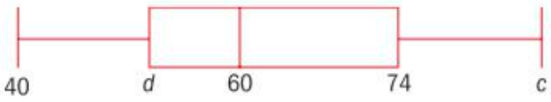
4. The box plot shows the heights, in cm, that a class of 8 year-olds could jump.



a What is the lowest height? 40

b Write down the median. 60

c If the range is 50 cm, find the value of c. 90

d Find the value of d if the interquartile range is 24 cm. 50

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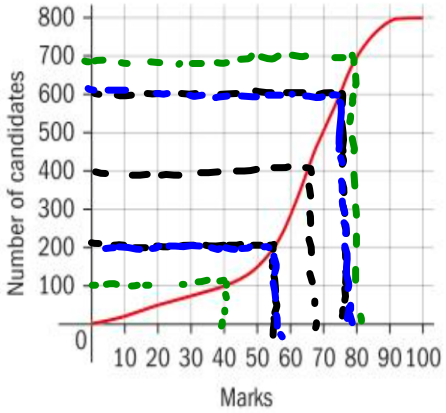
5. The test results for a group of children in a school district are shown on this cumulative frequency diagram.



a How many students' test scores were recorded? 800

b What is the median score? ≈65

c Show that the interquartile range is 20 marks. 75-55 = 20

d How many students scored more than 80 marks on the test? 100

e If Calvin earned 80 marks, would he be in the 90th percentile? Give reasons for your answer. $\frac{700}{800}$ = 87.5% not quite 90.

f 100 students scored less than k marks. Find the value of k. 40

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6. A survey was conducted of the number of mobile devices that families owned.

Mobile devices	1	2	3	4	5	6
f	41	60	52	32	15	8

a State whether the data is discrete or continuous. Discrete

b Write down the mean number of mobile devices per family.

c Write down the standard deviation.

d Find how many families have a number of mobile devices greater than one standard deviation above the mean.

(b) $\bar{x} = \dfrac{41(1) + 60(2) + 52(3) + 32(4) + 15(5) + 8(6)}{208}$

$= \dfrac{568}{208} \approx \boxed{2.73}$

(c) $\sigma = 1.34$

(d) $2.73 + 1.34 = 4.07$ only ≤ 6

$1548 \rightarrow \boxed{23 \text{ families}}$

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24 **P1:** Grouped, continuous data for the mass, w kg, of a group of adults is given in the table below.

Mass	$40 < w \leq 50$	$50 < w \leq 60$	$60 < w \leq 70$	$70 < w \leq 80$	$80 < w \leq 90$	$90 < w \leq 100$	$100 < w \leq 110$	$110 < w \leq 120$
Frequency	5	15	25	30	50	35	25	15

a State the modal interval. (1 mark)

b Construct a labelled cumulative frequency table for this data. (3 marks)

c On graph paper draw a cumulative frequency curve, with 1 cm representing 10 kg on the x-axis and 1 cm representing 10 adults on the y-axis. (5 marks)

d Hence, estimate values for the **i** median **ii** lower quartile **iii** upper quartile. Draw lines on your graph to indicate how you obtained these values. (4 marks)

(a) $80 < w \leq 90$

(b)

interval	f	c.f
40-50	5	5
50-60	15	20
60-70	25	45
70-80	30	75
80-90	50	125
90-100	35	160
100-110	25	185
110-120	15	200

median $\approx$ 85

Q1 $\approx$ 72

Q3 $\approx$ 97