IB Pre HL Exit Slip and IB Questions   Name: _____ *Key* _____

Calculator is okay.

1 A survey was conducted to determine the length of time, t, in minutes, people took to drink their coffee in a café. The information is shown in the following grouped frequency table.

Time, t (minutes)	Number of People
$0 < t \leq 5$	3
$5 < t \leq 10$	5
$10 < t \leq 15$	12
$15 < t \leq 20$	14
$20 < t \leq 25$	16
$25 < t \leq 30$	10

(a) Write down the total number of people who were surveyed. $\Rightarrow 60$

(b) Write down the mid-interval value for the $10 < t \leq 15$ group. $\Rightarrow 12.5$

(c) Find an estimate of the mean time people took to drink their coffee.

$$\frac{(3 \times 2.5)+(5 \times 7.5)+ \cdots \quad (10 \times 27.5)}{60} \approx 17.9$$

$$OR \quad \frac{215}{12}$$

The information above has been rewritten as a cumulative frequency table.

Time, t (minutes)	$t \leq 5$	$t \leq 10$	$t \leq 15$	$t \leq 20$	$t \leq 25$	$t \leq 30$
Cumulative frequency	3	8	20	a	50	b

(d) Write down the value of a and the value of b.

$a = 34$ $b = 60$

2
(e) For the people who were surveyed, use the graph to estimate

This information is shown in the following cumulative frequency graph.

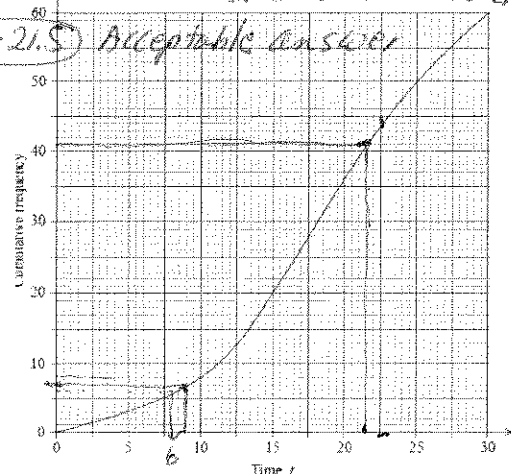(i) the time taken for the first 40 people to drink their coffee; ≤ 21.25 (21 or 21.5 are Not acceptable, OR (21 ~ 21.5) Acceptable answer

(ii) the number of people who take less than 8 minutes to drink their coffee;   (Less than 6)   5

(iii) the number of people who take more than 23 minutes to drink their coffee.

$60 - 45 = \boxed{15}$ (15 ± 1 is acceptable answer.)

3

Daniel grows apples and chooses at random a sample of 100 apples from his harvest.
He measures the diameters of the apples to the nearest cm. The following table shows the
distribution of the diameters.

Diameter (to the nearest cm)	5	6	7	8	9
Frequency	15	27	33	17	8

(a)   Using your graphic display calculator, write down the value of

(i)   the mean of the diameters in this sample; $6.76\ cm$.

(ii)   the standard deviation of the diameters in this sample. $0.338\ cm$

4

The following table shows the number of bicycles, x, produced daily by a factory and their
total production cost, y, in US dollars (USD). The table shows data recorded over seven
days.

	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
Number of bicycles, x	12	15	14	17	20	18	21
Production cost, y	3900	4600	4100	5300	6000	5400	6000

(a)   (i)   Write down the Pearson's product–moment correlation coefficient, r, for these
data.

$r = 0.985\ (0.984905\ldots)$

(ii)   Hence comment on the result.   Strong positive

(b)   Write down the equation of the regression line y on x for these data, in the form
$y = ax + b$.

$y = 260x + 699$.

(c)   Estimate the total cost, **to the nearest USD**, of producing 13 bicycles on a particular
day.

$y = 260(13) + 699 \approx \$4077$