Question 1(a)

Candidate 1 evidence

QUESTION NUMBER	
1.(a)	Most of the values of fat for bakery and non-bakery items lie within the same range as they have similar upper and lower quartiles. However, in terms of distribution, bakery items are negatively skewed whereas non-bakery items are positively skewed. Non-bakery items also have a larger range of fat values.

Candidate 2 evidence

1.(a)	- On average, bakery items have higher fat content than non bakery items - There is a similar spread (Q_1, Q_3) of fat contents between both bakery and non bakery items.

Question 1(b)

Candidate 3 evidence

1.(b)	Solving Inter-Quartile Range by $Q_3 - Q_1 = IQR$ then ~~the~~ solving upper and lower fence by lower fence $Q1 - 1.5 \times IQR$ upper fence $Q3 + 1.5 \times IQR$ outlier $= 120$ If ~~value~~ max/min value is greater than upper and lower fence then it is outlier

Question 1(c)

Candidate 4 evidence

1.(c)

Lower Fence = $Q_1 - 1{,}5\ IQR = 155$

Upper Fence = $Q_3 + 1{,}5\ IQR = 595$

$IQR = Q_3 - Q_1 = 110$

~~[illegible]~~ Lower Fence is greater than the value of outliers

Candidate 5 evidence

1.(c)

~~IQR = [illegible]~~

~~Q1 - 1.5 x IQR~~

$IQR = 430 - 320$
$= 110$

lower fence $= Q1 - 1.5 \times IQR$
$= 320 - 1.5 \times 110$
$= 155$

Since $130 < 155$, therefore it is an outlier

Question 1(d)

Candidate 6 evidence

QUESTION NUMBER	
1.(d)	They would lower the mean and it would no longer be representative of the average calorie intake from bakery items. They might be from small items that don't eat just by one, so the ~~average~~ intake would be higher as more than 1 would be consumed.

Candidate 7 evidence

1.(d)	makes the data overall more consistent as the outliers are likely to just be a mistake and could ~~[illegible]~~ change any conclusions made overall

Question 1(e)

Candidate 8 evidence

1.(e)	~~$H_0: \mu_d = 0$~~ ~~the standard error~~ ~~the sample~~ standard error

Candidate 9 evidence

1.(e)	standard deviation (σ)

Question 1(f)

Candidate 10 evidence

1.(f)	output 2 – $h_0: \mu_d = 0$ d – dissfrence in mean os sat content output 3 – $h_0: \mu_c = 0$ c – dissarence in mean calorie content

Candidate 11 evidence

1.(f)	Output 2; $H_0: \mu_d = 0$ $\quad \mu_d = \mu_b - \mu_{nb}$ $H_1: \mu_d \neq 0$ Output 3; $H_0: \mu_d = 0$ $\quad \mu_d = \mu_b - \mu_{nb}$ $H_1: \mu_d \neq 0$

Question 1(g)

Candidate 12 evidence

1.(g)	p-value = $2 \times P(t > 1.0496) = 2 \times 0.1470$ $= \underline{0.2940}$

Candidate 13 evidence

1.(g)	~~0.1469 × 2~~ ~~= 0.2938~~ ~~p value = 0.2938~~ 0.8531 × 2 p-value = 1.7062

Question 1(h)

Candidate 14 evidence

1.(h)	since 0.006131 $\not<$ 0.005 there would be an impact to your mean calorie intake, as bakery items have a much higher mean calorie content

Candidate 15 evidence

1.(h)	$p = 0.006931 < 0.05 \Rightarrow$ Reject H_0 at the 5% level of significance and conclude that ~~the true difference in mean calorie intake~~ there is evidence to suggest that the ~~true mean~~ true difference in mean calorie content of bakery and non-bakery items sold by the chain is not equal to 0. If ~~one~~ one consumed bakery items, one's mean calorie intake would be higher compared to consuming non-bakery items.

Candidate 16 evidence

1.(h)	As $2.7767 > 0.006931$, reject H_0 in favour of H_1. There is evidence to suggest that there is a difference in the mean amount of calories in the baking items and non-baking items. This would have an ~~mean~~ impact on your mean calorie intake if you chose to consume either baking items or non-baking items.

Question 2(a)(ii)

Candidate 17 evidence

2.(a)(ii)	observed value − expected value from linear model measures the error in the linear model at a given point

Candidate 18 evidence

2.(a)(ii)	Calculate it's y value be subing x into the least squares regression line Then take the y value away from your piece of data and it will give you the redidual It measures how accurate your piece of data it is, the closer to zero the more accurate

Question 2(b)(i)

Candidate 19 evidence

QUESTION NUMBER 2.(b) (i)

$b = \frac{S_{x\sqrt{y}}}{S_{xx}}$

$= \frac{78.8165}{45.5}$

$= 1.732$

$\overline{\sqrt{y}} = 28.477$

$\bar{x} = 5$

$a = 28.477 - 1.732 \times 5$

$= 19.817$

$\sqrt{y} = 19.817 + 1.1732x$

Candidate 20 evidence

QUESTION NUMBER 2.(b) (i)

$\Sigma x = 65$ $\Sigma\sqrt{y} = 370.2569$ $S_{xx} = 45.5$

$S_{\sqrt{y}\sqrt{y}} = 136.6022$ $S_{x\sqrt{y}} = 78.8615$

$b = \frac{78.8615}{45.5}$

$= 1.733 (3\text{-dp})$

$a = \cancel{28.4813}$

$\bar{y} = 28.4813$

$a = 28.4813 - (1.733 \times 5)$

$a = 19.8163$

$\cancel{y = 28.4813 + 1.733x}$

$y = 19.8163 + 1.733x$