

SA-STUDENT

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DO SOMETHING
TODAY
THAT YOUR
FUTURE SELF
WILL
THANK YOU FOR.



QUESTION/VRAAG 1

1.1	$a = -23,846\dots$ $b = 0,227\dots$ $\hat{y} = -23,85 + 0,23x$	✓ $a = -23,846\dots$ ✓ $b = 0,227\dots$ ✓ equation (3)
1.2	$\hat{y} = -23,85 + 0,23(550)$ $y = 102,65$ OR $y = 101,02$	✓ substitution of 550 ✓ answer (2) ✓✓ $y = 101,02$ (calculator) (2)
1.3	$r = 0,98$	✓ $r = 0,98$ (1)
1.4	Very strong positive correlation	✓ strong positive (1)

50	100	130	150	180	190	200	200
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1.5.1	$\bar{x} = \frac{1200}{8}$ $\bar{x} = 150$ OR $\bar{x} = 150$	✓ 1200 ✓ answer (2) ✓✓ $\bar{x} = 150$ (2)
1.5.2	$\sigma = 50,50$	✓ $\sigma = 50,50$ (1)
1.5.3	$\bar{x} - \sigma$ $= 150 - 50,50$ $= 99,50$ $\therefore 1 \text{ stop}$	✓ calculation of $\bar{x} - \sigma$ ✓ answer (2)
		[12]

QUESTION/VRAAG 2

2.1	<table border="1"> <thead> <tr> <th>Number of glasses of water per day</th><th>Number of staff members</th><th>Cumulative frequency</th></tr> </thead> <tbody> <tr> <td>$0 \leq x < 2$</td><td>5</td><td>5</td></tr> <tr> <td>$2 \leq x < 4$</td><td>15</td><td>20</td></tr> <tr> <td>$4 \leq x < 6$</td><td>13</td><td>33</td></tr> <tr> <td>$6 \leq x < 8$</td><td>5</td><td>38</td></tr> <tr> <td>$8 \leq x < 10$</td><td>2</td><td>40</td></tr> </tbody> </table>	Number of glasses of water per day	Number of staff members	Cumulative frequency	$0 \leq x < 2$	5	5	$2 \leq x < 4$	15	20	$4 \leq x < 6$	13	33	$6 \leq x < 8$	5	38	$8 \leq x < 10$	2	40	✓ 5; 20 ✓ 40 (2)
Number of glasses of water per day	Number of staff members	Cumulative frequency																		
$0 \leq x < 2$	5	5																		
$2 \leq x < 4$	15	20																		
$4 \leq x < 6$	13	33																		
$6 \leq x < 8$	5	38																		
$8 \leq x < 10$	2	40																		
2.2	40 staff members	✓ answer (1)																		
2.3	33 staff members	✓ answer (1)																		
2.4	$\bar{x} = \frac{\left(1 \times \left(5 + \frac{k}{2}\right)\right) + (3 \times 15) + \left(5 \times \left(13 + \frac{k}{2}\right)\right) + (7 \times 5) + (9 \times 2)}{40 + k} = 4$ $5 + \frac{k}{2} + 45 + 65 + \frac{5k}{2} + 35 + 18 = 160 + 4k$ $3k + 168 = 160 + 4k$ $k = 8$ OR $\bar{x} = \frac{(1 \times 5) + (15 \times 3) + (13 \times 5) + (5 \times 7) + (2 \times 9)}{40}$ $= 4,2$ $\bar{x}_{\text{old}} - \bar{x}_{\text{current}} = 4,2 - 4$ $= 0,2$ $\therefore 0,2 \times 40$ $= 8 \text{ teachers}$	✓ answer from Q2.2 + k ✓ $\left(1 \times \left(5 + \frac{k}{2}\right)\right)$ ✓ $\left(5 \times \left(13 + \frac{k}{2}\right)\right)$ ✓ answer (4) ✓ 4,2 ✓ $\bar{x}_{\text{old}} - 4$ ✓ difference ✓ answer (4)																		
		[8]																		

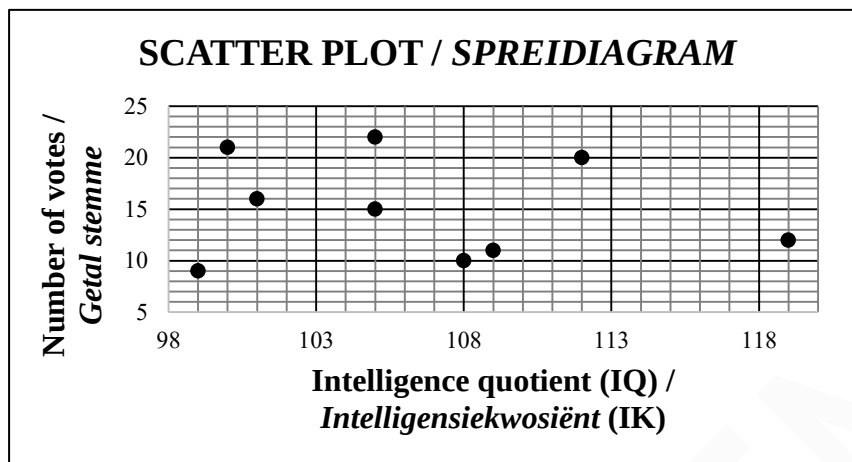
QUESTION/VRAAG 1

1.1.1	$a = 1730,22$ $b = 13,96$ $\hat{y} = 1730,22 + 13,96x$	✓ $a = 1730,22$ ✓ $b = 13,96$ ✓ equation (3)
1.1.2	$\hat{y} = 1730,22 + 13,96x$ $\hat{y} = 1730,22 + 13,96(28\,500)$ $\hat{y} = R399\,590,22$ OR/OF $\hat{y} = R399\,599,64$ (calc)	✓ substitution ✓ answer (2) ✓✓ answer (2)
1.1.3	$r = 0,98002 \dots$ $r = 0,98$	✓ answer (1)
1.1.4	There is a very strong positive correlation between the amount spent on advertising and sales. / <i>Daar is 'n baie sterk positiewe korrelasie tussen die bedrag spandeer op advertensie en die verkope.</i>	✓ strong positive (1)
1.2.1	$\bar{x} = \frac{1\,552\,195}{9}$ $\bar{x} = 172\,466,11$	✓ $\bar{x} = \frac{1\,552\,195}{9}$ ✓ answer (2)
1.2.2	$\sigma = 56\,950,09$	✓ answer (1)
1.2.3	$\bar{x} + \sigma$ $= 172\,466,11 + 56\,950,09$ $= 229\,416,20$ 2 years/jaar	✓ $\bar{x} + \sigma$ ✓ answer (2)
		[12]

QUESTION/VRAAG 2

2.1	$35 < x \leq 45$	✓ answer (1)																								
2.2	320 people/mense	✓ answer (1)																								
2.3	<table border="1"> <thead> <tr> <th>AGE</th><th>NUMBER OF PEOPLE</th><th>CUMULATIVE FREQUENCY</th></tr> </thead> <tbody> <tr> <td>$5 < x \leq 15$</td><td>20</td><td>20</td></tr> <tr> <td>$15 < x \leq 25$</td><td>25</td><td>45</td></tr> <tr> <td>$25 < x \leq 35$</td><td>60</td><td>105</td></tr> <tr> <td>$35 < x \leq 45$</td><td>90</td><td>195</td></tr> <tr> <td>$45 < x \leq 55$</td><td>55</td><td>250</td></tr> <tr> <td>$55 < x \leq 65$</td><td>40</td><td>290</td></tr> <tr> <td>$65 < x \leq 75$</td><td>30</td><td>320</td></tr> </tbody> </table>	AGE	NUMBER OF PEOPLE	CUMULATIVE FREQUENCY	$5 < x \leq 15$	20	20	$15 < x \leq 25$	25	45	$25 < x \leq 35$	60	105	$35 < x \leq 45$	90	195	$45 < x \leq 55$	55	250	$55 < x \leq 65$	40	290	$65 < x \leq 75$	30	320	
AGE	NUMBER OF PEOPLE	CUMULATIVE FREQUENCY																								
$5 < x \leq 15$	20	20																								
$15 < x \leq 25$	25	45																								
$25 < x \leq 35$	60	105																								
$35 < x \leq 45$	90	195																								
$45 < x \leq 55$	55	250																								
$55 < x \leq 65$	40	290																								
$65 < x \leq 75$	30	320																								
	OGIVE/OGIEF	✓ cumulative frequency ✓ grounding ✓ plotting at upper limit ✓ shape (4)																								
2.4	Median = 41	✓✓ answer (2)																								
		[8]																								

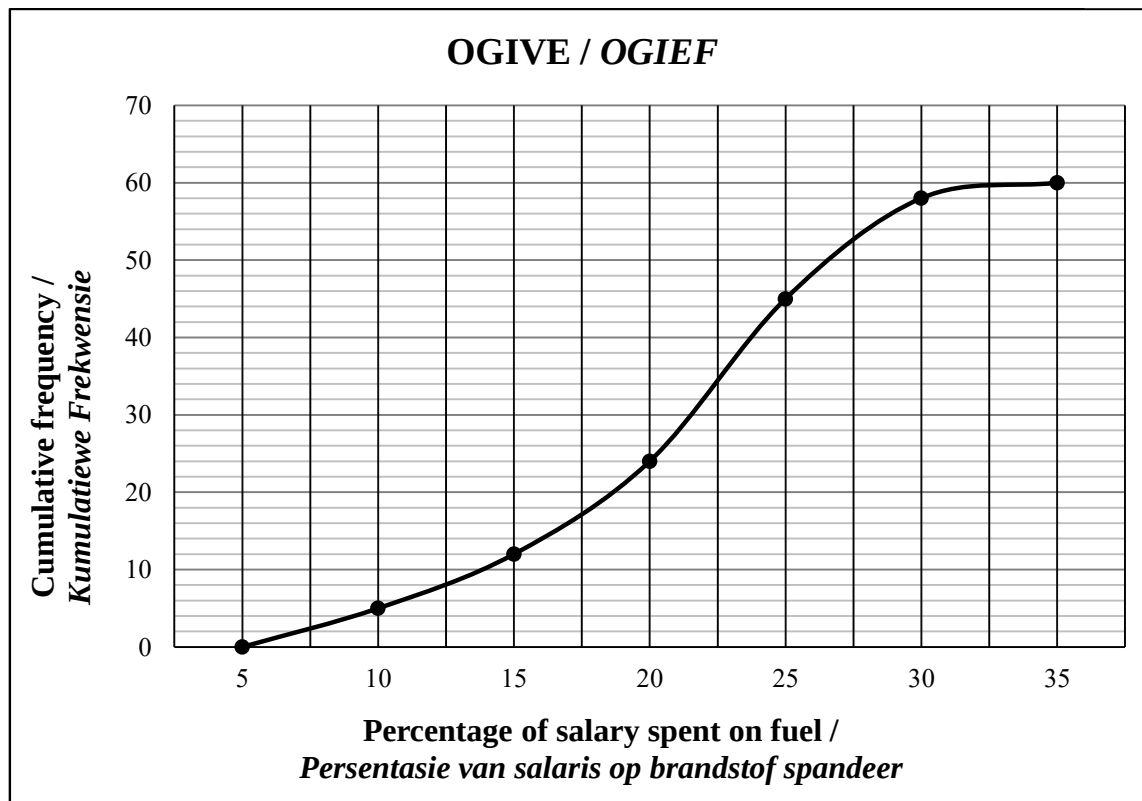
QUESTION/VRAAG 1



Popularity score (x) Gewildheidspunt (x)	32	89	35	82	50	59	81	40	79	65
Number of votes (y) Getal stemme (y)	9	22	10	21	11	15	20	12	19	16

1.1.1	$\bar{y} = \frac{155}{10}$ $= 15,5$ ANSWER ONLY: Full marks	✓ 155 ✓ answer (2)
1.1.2	SD = 4,59	✓ answer (1)
1.2	$\bar{y} - SD$ $= 15,5 - 4,59$ $= 10,91$ $\therefore 10 - 2 = 8 \text{ learners}$	✓ value of $\bar{y} - SD$ ✓ answer (2)
1.3	$a = 1,7709...$ $b = 0,2243...$ $\hat{y} = 1,77 + 0,22x$	✓ a ✓ b ✓ equation (3)
1.4	$\hat{y} = 1,77 + 0,22(72)$ $= 17,61$ $\approx 18 \text{ votes}$ OR/OF $\hat{y} = 17,92 \approx 18 \text{ votes}$	✓ substitution ✓ answer (2) ✓✓ answer (2)
1.5.1	Points are all scattered therefore low correlation and unrealistic prediction./Punte is versprei daarom 'n lae korrelasie en onrealistiese voorspelling.	✓ R (1)
1.5.2	$r = 0,98$ /correlation very strong/korrelasie baie sterk $\therefore$ a reliable prediction/'n betroubare voorspelling	✓ S (1)
[12]		

QUESTION/VRAAG 2



2.1	60 employees	✓ answer (A)	(1)
2.2	$20 < x \leq 25$	✓ answer	(1)
2.3	$60 - 34 = 26$ employees ANSWER ONLY: Full marks	✓ 34 ✓ answer	(2)
2.4	$\text{Salary} = \frac{100}{7} \times 2400$ $\text{Salary} = \text{R}34\,285,71$ ANSWER ONLY: Full marks	✓ method ✓ answer	(2)
2.5	$\therefore$ Ogive/Cumulative frequency graph will shift to the right/will become steeper. $\therefore$ Ogief/Kumulatiewe frekwensie grafiek sal na regs skuif/sal steiler wees.	✓✓ answer	(2)
[8]			

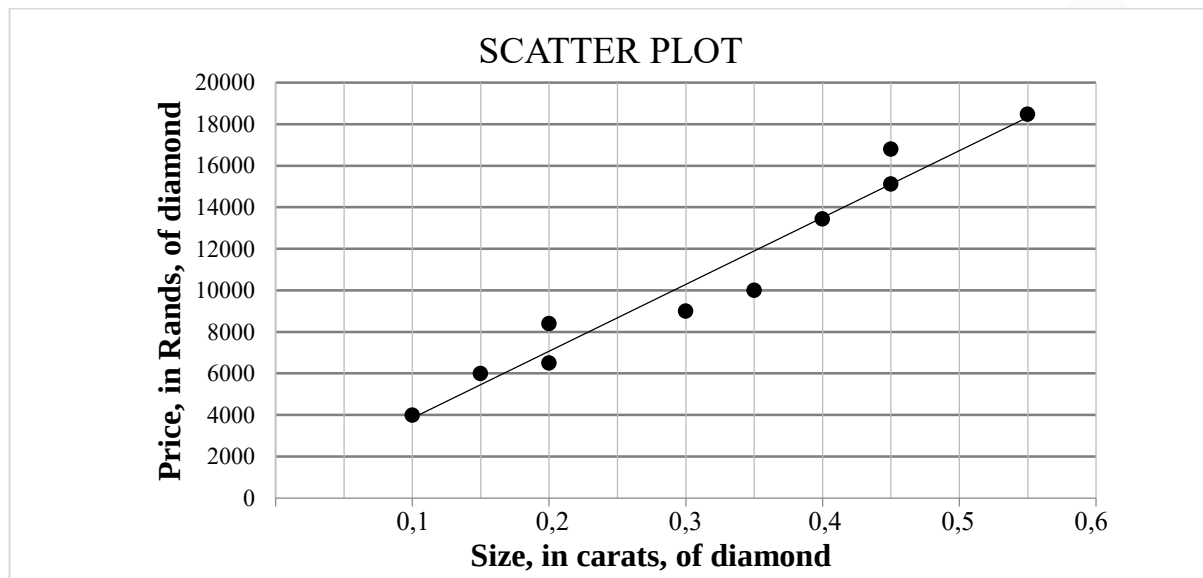
QUESTION/VRAAG 1

1.1	Modal class: $9 < m \leq 11$	✓ answer (1)																								
1.2	<table border="1"> <thead> <tr> <th>Mass (in kg)</th><th>Frequency</th><th>Cumulative frequency</th></tr> </thead> <tbody> <tr> <td>$5 < m \leq 7$</td><td>6</td><td>6</td></tr> <tr> <td>$7 < m \leq 9$</td><td>18</td><td>24</td></tr> <tr> <td>$9 < m \leq 11$</td><td>21</td><td>45</td></tr> <tr> <td>$11 < m \leq 13$</td><td>19</td><td>64</td></tr> <tr> <td>$13 < m \leq 15$</td><td>11</td><td>75</td></tr> <tr> <td>$15 < m \leq 17$</td><td>4</td><td>79</td></tr> <tr> <td>$17 < m \leq 19$</td><td>1</td><td>80</td></tr> </tbody> </table>	Mass (in kg)	Frequency	Cumulative frequency	$5 < m \leq 7$	6	6	$7 < m \leq 9$	18	24	$9 < m \leq 11$	21	45	$11 < m \leq 13$	19	64	$13 < m \leq 15$	11	75	$15 < m \leq 17$	4	79	$17 < m \leq 19$	1	80	✓ adding ✓ 80 (2)
Mass (in kg)	Frequency	Cumulative frequency																								
$5 < m \leq 7$	6	6																								
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$15 < m \leq 17$	4	79																								
$17 < m \leq 19$	1	80																								
1.3		✓ grounding (5 ; 0) ✓ points ✓ shape (3)																								
1.4	Median mass: 10,5 kg	✓✓ answer (2)																								
1.5.1	$\bar{x} = \frac{(6 \times 6 + 18 \times 8 + 21 \times 10 + 19 \times 12 + 11 \times 14 + 4 \times 16 + 1 \times 18)}{80}$ $= \frac{854}{80}$ $= 10,68$ Answer only 2/2	✓ 854 ✓ answer (2)																								
1.5.2	Learners' bags are heavier than the stipulated international guideline. Estimated mean = 10,68 kg 10% of 80 kg = 8 kg 10,68 kg > 8 kg	✓ answer ✓ 8 kg (2)																								

	OR/ OF Learners' bags are heavier than the stipulated international guideline. $\text{Estimated mean} = \frac{10,68}{80} \times 100$ $= 13,35\%$ $13,35\% > 10\%$	✓ answer ✓ 13,35% (2)
[12]		

QUESTION/VRAAG 2

Size, in carats, of diamond (x)	0,1	0,15	0,2	0,2	0,3	0,35	0,4	0,45	0,45	0,55
Price, in rands, of diamond (y)	4 000	6 000	6 500	8 400	9 000	10 000	13 440	15 120	16 800	18 480



2.1	$a = 634,382\dots$ $b = 32\,189,263\dots$ $\hat{y} = 634,38 + 32189,26x$	Answer only 3/3	✓ a ✓ b ✓ equation	(3)
2.2	$\hat{y} = 634,38 + 32189,26(0,25)$ $= R8\,681,70$ OR/OF $\hat{y} = R8\,681,70$ (if using calculator)		✓ substitution ✓ answer	(2)
2.3	Average price increase $= R \frac{32189,26}{20}$ per 0,05 carat $= R1\,609,46$ per 0,05 carat OR/OF Average price increase $= 0,05 \times 32\,189,26$ $= R1\,609,46$ per 0,05 carat OR/OF at 0,3: $\hat{y} = R10\,291,16$ $\therefore$ Average price increase $= 10\,291,16 - 8\,681,70$ $= R1\,609,46$ per 0,05 carat	Answer only 2/2	✓ divide gradient by 20 ✓ answer ✓ multiply gradient by 0,05 ✓ answer ✓ Estimated price of a 0,3 carat diamond ✓ answer	(2) (2) (2)
2.4	The point (0,35 ; 11500) is closer to the least squares regression line.		✓ reason	(1)
[8]				

QUESTION/VRAAG 1

10	11	13	14	14	15	16	18	18
19	19	20	21	35	35	37	40	41

1.1.1	$\bar{x} = \frac{396}{18}$ $\bar{x} = 22$	Answer only: Full marks <i>Slegs antw: Volpunte</i>	✓ 396 ✓ answer (2)
1.1.2	$\sigma = 10,1707 \approx 10,17$		✓ answer (1)
1.1.3	$\bar{x} + \sigma = 32,17$ $\therefore 5 \text{ days}$		✓ 32,17 ✓ 5 (2)
1.2	$22 \times 18 = 396$ ordered/ <i>bestel</i> $20 \times 18 = 360$ sold/ <i>verkoop</i> Total not sold/ <i>Totaal nie verkoop nie</i> : 36 OR/OF $22 - 20 = 2$ $2 \times 18 = 36$		✓ $18\bar{x}_1$ and $18\bar{x}_2$ ✓ answer (2)
1.3.1	Option B/ <i>Opsie B</i> <u>Any one of the following reasons/<i>Enige een van die vlg redes</i>:</u> • Median/<i>Mediaan</i> = 18,5 • $Q_1 = 14$ • IQR = 21 • Mean > Median, therefore the data is skewed to the right		✓ B ✓ reason (2)
1.3.2	Data is positively skewed/skewed to the right <i>Data is positief skeef/skeef na regs</i>		✓ answer (1)
[10]			

QUESTION/VRAAG 2

Price of milk in rands per 5-litre container (x) <i>Prys van melk in rand, per 5 liter-houer (x)</i>	26	32	36	28	40	33	29	34	27	30
Number of 5-litre containers of milk sold (y) <i>Aantal 5 liter-houers melk verkoop (y)</i>	48	30	26	44	23	32	39	29	42	33

2.1	SCATTER PLOT Price per 5 litre	1 mark: 3 to 5 points plotted correctly 2 marks: 6 to 9 points plotted correctly 3 marks: all points plotted correctly (3)
2.2	$a = 90,478... \approx 90,48$ $b = -1,773... \approx -1,77$ $\hat{y} = 90,48 - 1,77x$ Answer only: Full marks <i>Slegs antw: Volpunte</i>	✓ a ✓ b ✓ equation (3)
2.3	$y = 23,069... \approx 23,07$ units/eenhede (calculator/sakrekenaar) OR/OF $y = 90,48 - 1,77(38)$ $y = 23,22$ units/eenhede	✓✓ answer (2) ✓ substitution ✓ answer (2)
2.4	$r = -0,94$ The value of r indicates a strong relationship between the cost per 5 litre and the number of units sold $\therefore$ there is a good chance of the prediction being accurate./ <i>Die waarde van r dui 'n sterk vewantskap tussen die koste per 5 liter en die aantal eenhede verkoop aan $\therefore$ daar is 'n goeie kans dat die voorspelling akkuraat is</i>	✓ value of r OR/OF strong relationship/ <i>sterk verwantskap</i> ✓ accurate/akkuraat (2)
[10]		

QUESTION/VRAAG 1

1.1

26	13	3	18	12	34	24	58	16	10	15	69	20	17	40
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1.1.1(a)	$\bar{x} = \frac{375}{15}$ $\bar{x} = 25 \text{ MB}$ Answer only: Full marks	✓ 375 ✓ answer (2)
1.1.1(b)	$\sigma = 17,65 \text{ MB}$	✓ answer (1)
1.1.2	$25 + 17,65 = 42,65$ $\therefore 2 \text{ days}$	✓ 42,65 ✓ 2 (2)
1.1.3	Overall $\bar{x} = \frac{80}{100} \times 25$ $= 20 \text{ MB}$ $\frac{375 + x}{30} = 20$ $x = 600 - 375$ $= 225$ maximum total amount of data that Sam must use for the remainder of the month: 225 MB	✓ Overall $\bar{x} = 20$ ✓ $\frac{375 + x}{30} = 20$ ✓ answer (3)

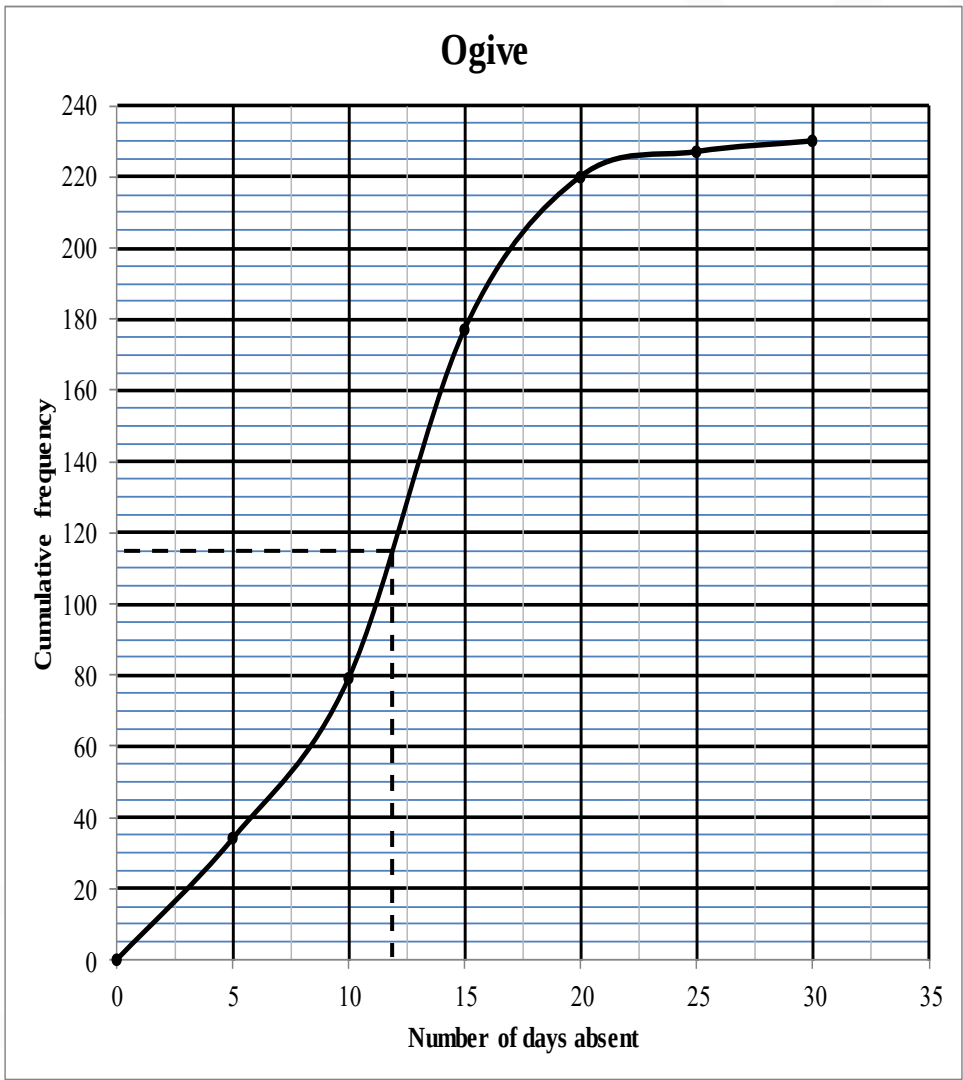
1.2

Wind speed in km/h (x)	2	6	15	20	25	17	11	24	13	22
Temperature in °C (y)	28	26	22	22	16	20	24	19	26	19

1.2.1	$a = 29,35$ $b = -0,46$ $\hat{y} = 29,35 - 0,46x$	✓ a ✓ b ✓ equation (3)
1.2.2	$y = 25,20 \text{ °C}$ (calculator) OR $\hat{y} = 29,35 - 0,46(9)$ $y = 25,21 \text{ °C}$	✓✓ answer (2) ✓ substitution ✓ answer (2)
1.2.3	$b < 0$, indicating that as the wind speed increases the temperature decreases.	✓ interpretation (1)
[14]		

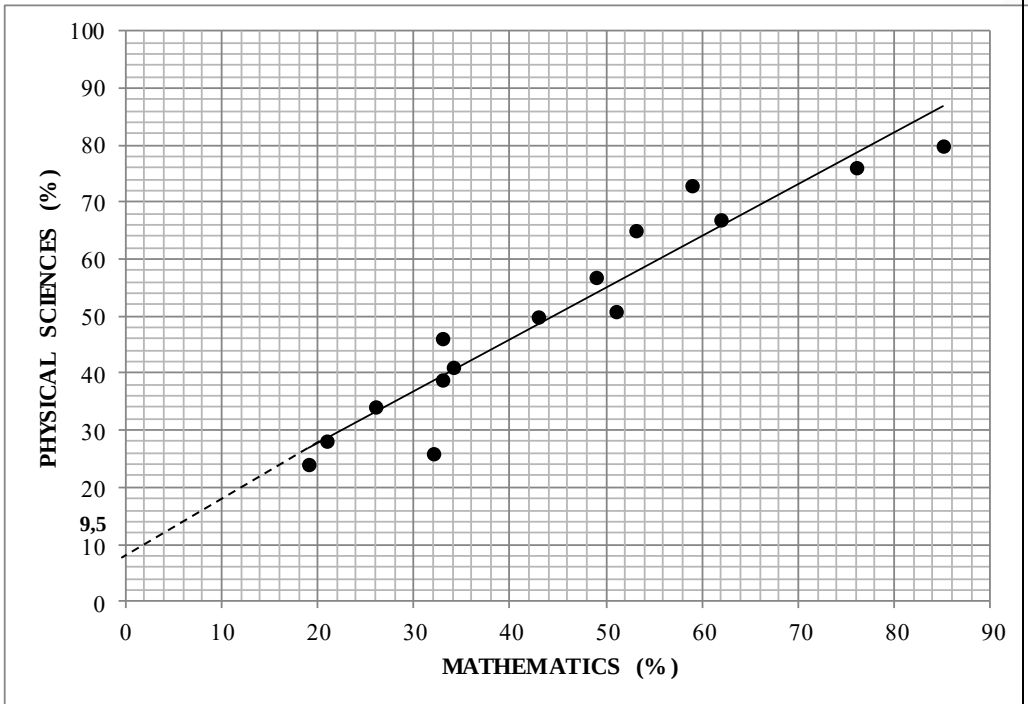
QUESTION/VRAAG 2

Number of days absent	Number of learners	Cumulative frequency
$0 \leq x < 5$	34	34
$5 \leq x < 10$	45	79
$10 \leq x < 15$	98	177
$15 \leq x < 20$	43	220
$20 \leq x < 25$	7	227
$25 \leq x < 30$	3	230

2.1	Modal class: $10 \leq x < 15$	✓ answer (1)
2.2	177 learners	✓ answer (1)
2.3	230 learners	✓ answer (1)
2.4	 Ogive Cumulative frequency Number of days absent	✓ grounding at (0; 0) ✓ shape ✓ upper limits ✓ All other points correct (4)
2.5	The median is at position 115. ∴ value of median is 12 days (accept 11 – 14) Answer only: Full marks	✓ reading off at 115 ✓ answer (2)

[9]

QUESTION/VRAAG 1

1.1	$a = 9,5$ $b = 0,909.. = 0,91$ $\hat{y} = 9,5 + 0,91x$	✓ $a = 9,5$ ✓ $b = 0,91$ ✓ equation (3)
1.2		✓✓ correct slope going through 2 points: (50 ; 55) or (40 ; 46) or (60 ; 64) or (0 ; 9,5) or (45 ; 50) (2)
1.3	Final exam mark $\approx 72,22\%$ (calculator) OR $\hat{y} = 9,5 + 0,91(69)$ $\approx 72,29\%$	✓✓ answer (2) ✓ substitution ✓ answer (2)
1.4	$r = 0,95$	✓ answer(A) (1)
1.5	There is a very strong positive correlation between the Mathematics and Physical Sciences mark. <i>Daar is 'n baie sterk positiewe korrelasie tussen die Wiskunde en Fisiese Wetenskappunte.</i>	✓ strong/ sterk (1)
1.6	The teacher concludes that the higher the learners' Mathematics marks, the higher the learners' Physical Sciences marks. <i>Die onderwyser het waargeneem dat hoe hoër die wiskunde punte is, hoe hoër is die Fisiese Wetenskappunte.</i>	✓ answer (1)
[10]		

QUESTION/VRAAG 2

2 018	2 175	2 182	2 215	2 254	2 263	2 267	2 271	2 293	2 323	2 334	2 346
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2.1	July / <i>Julie</i>	✓ answer (1)
2.2	$\bar{x} = \frac{26\,941}{12}$ $= 2\,245,083\ldots \approx 2\,245,08 \text{ aircraft landings}$ Answer only: Full marks	✓ 26 941 ✓ answer (2)
2.3	Standard deviation for landings at the King Shaka International airport: $\sigma = 86,30$	✓✓ answer (2)
2.4	$(\bar{x} - \sigma; \bar{x} + \sigma) = (2\,245,08 - 86,30; 2\,245,08 + 86,30)$ limit = $(2\,158,78; 2\,331,38)$ There were 9 months when the aircraft arrivals at the King Shaka International airport were within one standard deviation of the mean.	✓ $\bar{x} - \sigma$ ✓ $\bar{x} + \sigma$ ✓ answer (3)
2.5	The standard deviation of the number of landings at the Port Elizabeth Airport will be higher than the standard deviation of the number of arrivals at the King Shaka International Airport OR C.	✓ answer (1)
[9]		

QUESTION/VRAAG 1

Monthly income (in rands) Maandelikse inkomste (in rand)	9 000	13 500	15 000	16 500	17 000	20 000
Monthly repayment (in rands) Maandelikse paaielement (in rand)	2 000	3 000	3 500	5 200	5 500	6 000

1.1	$a = -1946,875... = -1946,88$ $b = 0,41$ $\hat{y} = -1946,88 + 0,41x$ Answer only: Full marks	✓ $a = -1946,88$ ✓ $b = 0,41$ ✓ equation (3)
1.2	Monthly repayment $\approx$ R3 727,16 (calculator) <i>Maandelikse paaielement $\approx$ R3 727,16</i> OR $\hat{y} = -1946,88 + 0,41(14000)$ $\approx$ R3 793,12	✓✓ answer (2) ✓ substitution ✓ answer (2)
1.3	$r = 0,946 \dots \approx 0,95$	✓ answer (1)
1.4	Not to spend R9 000 per month because the point (18 000 ; 9 000) lies very far from the least squares regression line. OR D <i>Spandeer nie R9 000 per maand nie, want die punt (18 000 ; 9 000) lê baie ver van die kleinste-kwadrade regressielyn. OF D</i>	✓✓ answer (2)
[8]		

QUESTION/VRAAG 2

2.1	Number people paid R200 or less = 19 <i>Aantal mense wat R200 of minder betaal het = 19</i>	✓ answer (1)
2.2	$7 + 12 + a + 35 + b + 6 = 100$ $a = 40 - b$ $309 = \frac{(50 \times 7) + (150 \times 12) + (250 \times a) + (350 \times 35) + (450 \times b) + (550 \times 6)}{100}$ $309 = \frac{(50 \times 7) + (150 \times 12) + (250 \times (40 - b)) + (350 \times 35) + (450 \times b) + (550 \times 6)}{100}$ $350 + 1800 + 10000 - 250b + 12250 + 450b + 3300 = 30900$ $200b = 3200$ $b = 16$ $a = 24$ OR/OF $7 + 12 + a + 35 + b + 6 = 100$ $b = 40 - a$ $309 = \frac{(50 \times 7) + (150 \times 12) + (250 \times a) + (350 \times 35) + (450 \times b) + (550 \times 6)}{100}$ $309 = \frac{(50 \times 7) + (150 \times 12) + (250 \times a) + (350 \times 35) + (450 \times (40 - a)) + (550 \times 6)}{100}$ $350 + 1800 + 250a + 12250 + 1800 - 450a = 30900$ $200a = 4\ 800$ $a = 24$ $b = 16$	$\checkmark \sum x = 100$ $\checkmark a = 40 - b$ $\checkmark \sum fX$ $\checkmark \sum \frac{fX}{n} = 309$ $\checkmark 200b = 3200$ (5) $\checkmark \sum x = 100$ $\checkmark b = 40 - a$ $\checkmark \sum fX$ $\checkmark \sum \frac{fX}{n} = 309$ $\checkmark 200a = 4\ 800$ (5)
2.3	Modal class/modale klas: $300 < x \leq 400$	✓ answer (1)

QUESTION/VRAAG 1

1.1	45 children	✓ answer (1)																								
1.2	$\bar{x} = \frac{\sum fx}{n} = \frac{(4 \times 2) + (8 \times 10) + (12 \times 9) + (16 \times 7) + (20 \times 8) + (24 \times 7) + (28 \times 2)}{45}$ $\bar{x} = \frac{692}{45} \text{ OR } \bar{x} = 15,38 \text{ minutes}$ Answer only: full marks	✓ 692 ✓ answer (2)																								
1.3	<table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th>Time taken (t) (in minutes)</th><th>Number of children</th><th>Cumulative frequency</th></tr> </thead> <tbody> <tr><td>$2 < t \leq 6$</td><td>2</td><td>2</td></tr> <tr><td>$6 < t \leq 10$</td><td>10</td><td>12</td></tr> <tr><td>$10 < t \leq 14$</td><td>9</td><td>21</td></tr> <tr><td>$14 < t \leq 18$</td><td>7</td><td>28</td></tr> <tr><td>$18 < t \leq 22$</td><td>8</td><td>36</td></tr> <tr><td>$22 < t \leq 26$</td><td>7</td><td>43</td></tr> <tr><td>$26 < t \leq 30$</td><td>2</td><td>45</td></tr> </tbody> </table>	Time taken (t) (in minutes)	Number of children	Cumulative frequency	$2 < t \leq 6$	2	2	$6 < t \leq 10$	10	12	$10 < t \leq 14$	9	21	$14 < t \leq 18$	7	28	$18 < t \leq 22$	8	36	$22 < t \leq 26$	7	43	$26 < t \leq 30$	2	45	✓ first 4 cum freq correct ✓ last 3 cum freq correct (2)
Time taken (t) (in minutes)	Number of children	Cumulative frequency																								
$2 < t \leq 6$	2	2																								
$6 < t \leq 10$	10	12																								
$10 < t \leq 14$	9	21																								
$14 < t \leq 18$	7	28																								
$18 < t \leq 22$	8	36																								
$22 < t \leq 26$	7	43																								
$26 < t \leq 30$	2	45																								
1.4	CUMULATIVE FREQUENCY GRAPH (OGIVE)	✓ plotting cum freq at upper limits correctly (all points) ✓ shape (smooth) ✓ grounding (2;0) (3)																								
1.5	On graph at the y-value of 22,5 or 23 Median = ± 15 minutes. Answer only: full marks	✓ graph ✓ answer (2)																								
		[10]																								

QUESTION/VRAAG 2

2.1	$a = 12,44$ $b = 0,98$ $y = 12,44 + 0,98x$ Answer only: full marks	✓ value of a ✓ value of b ✓ equation (3)
2.2.1	Percentage = $\frac{15}{50} \times 100$ = 30%	✓ answer (1)
2.2.2	$\hat{y} = 12,44 + 0,98x$ $\hat{y} = 12,44 + 0,98(30)$ $\hat{y} = 41,84$ = 42 OR $\hat{y} = 41,87$ (if using calculator) $\hat{y} = 42$ OR $\hat{y} = \frac{21}{50}$ Answer only: full marks	✓ substitution of 30 ✓ answer as integer (2) ✓ value of y ✓ answer as integer (2) ✓ ✓ answer (2)
2.3.1	standard deviation = 13,88	✓ ✓ answer (2)
2.3.2	$x = 50,67 - 45,67$ = 5% Answer only: full marks	✓ $50,67 - 45,67$ ✓ answer (2)
		[10]

QUESTION/VRAAG 1

1.1.1	140 items	✓ answer (1)
1.1.2	Modal class/modale klas: $20 < x \leq 30$ minutes OR/OF $20 \leq x < 30$ minutes	✓ answer (1) ✓ answer (1)
1.1.3	Number of minutes taken = 20 minutes	✓ answer (1)
1.1.4	140 – 126 [Accept: 124 to 128] 14 orders (12 to 16) Answer only: Full marks	✓ 126 ✓ answer (2)
1.1.5	75 th percentile is at 105 items =37 minutes [accept 36 – 38 minutes] Answer only: Full marks	✓ 105 ✓ answer (2)
1.1.6	Lower quartile is at 35 items =21,5 min [accept 21 – 23 min] IQR = 37 – 21,5 = 15,5 min [accept 13 – 17 min] Answer only: Full marks	✓ lower quartile (Q_1) ✓ answer (2)

35	70	75	80	80
90	100	100	105	105
110	110	115	120	125

1.2.1(a)	$\bar{x} = \frac{1420}{15}$ = R94,666.. = R94,67 Answer only: Full marks	✓ 1420 ✓ answer (2)
1.2.1(b)	$\sigma = R22,691... = R22,69$	✓✓ answer (2)
1.2.2(a)	They both collected the same (equal) amount in tips, i.e. R1 420 over the 15-day period. <i>Hulle albei het dieselfde bedrag met foonitjies ontvang, nl. R1 420 oor die 15 dae-tydperk</i>	✓ answer (1)
1.2.2(b)	Mary's standard deviation is smaller than Reggie's which suggests that there was greater variation in the amount of tips that Reggie collected each day compared to the number of tips that Mary collected each day. <i>Marie se standaardafwyking is kleiner as Reggie s'n wat beteken dat daar groter variasie/verspreiding in die foonitjies was wat Reggie elke dag ontvang het in vergelyking met die getal foonitjies wat Marie elke dag ontvang het.</i>	✓ explanation (1)
[15]		

2.4	For $(0 ; 27,07)$, it means that the player has a height of 0 m but can serve at a speed of 27,07 km/h. It is impossible for a person to have a height of 0 m. <i>(0 ; 27,07) beteken dat 'n speler 'n lengte van 0 m kan hê en teen 'n spoed van 27,07 km/h kan afslaan. Dit is onmoontlik om 'n lengte van 0 m te hê.</i> OR/OF This means that the player does not exist and therefore cannot serve and have a serve speed. <i>Dit beteken dat die speler nie bestaan nie en daarom nie kan afslaan en 'n afslaanspoed hê nie.</i>	✓ explanation (1) ✓ explanation (1)
[5]		

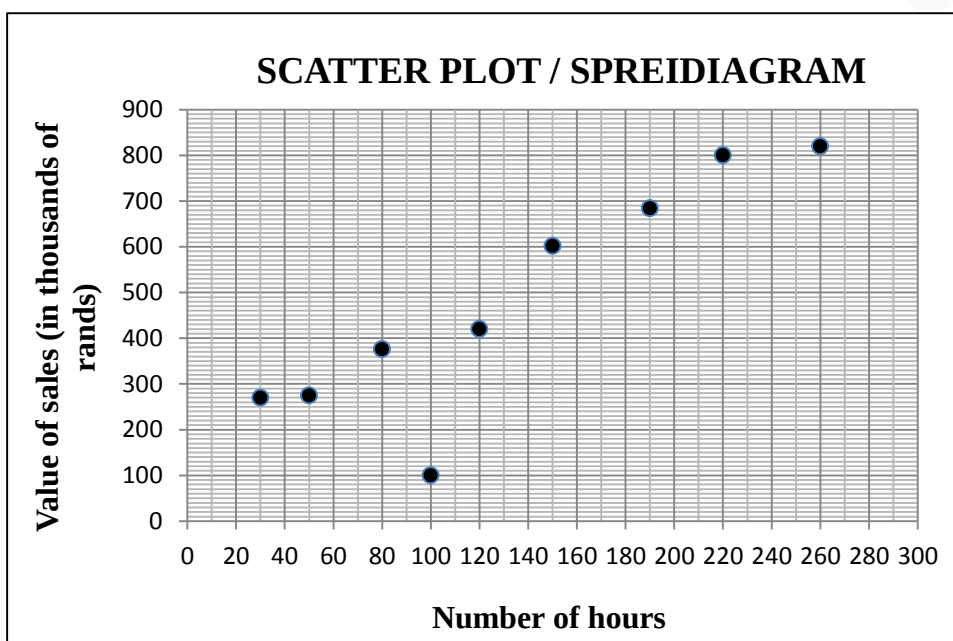
QUESTION/VRAAG 1

Days/Dae	1	2	3	4	5	6	7	8	9	10
Units of blood/ Eenhede bloed	45	59	65	73	79	82	91	99	101	106

1.1.1	$\bar{x} = \frac{800}{10}$ $= 80$ Answer only: full marks	✓ 800 (addition of units) ✓ answer (CA if ÷ 10) (2)
1.1.2	$\sigma = 18,83$ No penalty for rounding	✓✓ answer (A) (2)
1.1.3	(61,17; 98,83) Days 1, 2, 8, 9 and 10 lie outside 1 standard deviation from the mean ∴ 5 days Correct answer only: full marks provided that 1.1.1. & 1.1.2 both correct	✓ mean – 1 SD ✓ mean + 1 SD ✓ answer (3)
1.2.1	Skewed to the left or negatively skewed/ <i>Skeef na links of negatief skeef</i>	✓ answer (1)
1.2.2	A = 65 B = 99 Answers without labelling: 1/2	✓ answer ✓ answer (2)
1.3	New total = $95 \times 10 = 950$ ∴ Units not counted = $950 - 800 = 150$	✓ answer (CA from 1.1.1) (1) [11]

QUESTION/VRAAG 2

Number of hours Aantal uur	30	50	80	100	120	150	190	220	260
Value of sales (in thousands of rands) Waarde van verkope (in duisend rand)	270	275	376	100	420	602	684	800	820



2.1	Outlier/Uitskieter: (100 ; 100)	accept: 100 as answer	✓ answer (1)
2.2	$a = 94,50273\dots$ $b = 2,913729\dots$ $\hat{y} = 94,50 + 2,91x$	Integral values: max 2/3 Swopped a and b : 2/3	✓ value of a ✓ value of b ✓ equation (3)
2.3	$\hat{y} = 2,91(240) + 94,50$ (CA from 2.1) $= 792,90$ Value = R793 000 OR/OF $\hat{y} = 793,7978142$ (calculator) Value = R794 000	Penalise 1 mark if answer not in thousands of Rands	✓ substitution ✓ answer in thousands of Rands (2) ✓✓ answer in thousands of Rands (2)
2.4	$b = 2,913729\dots$ $\therefore$ R2 914 OR/OF R2 910 (calculator)	Answer only: full marks	✓ value of b ✓ answer (2) [8]

QUESTION/VRAAG 1

110	112	156	164	167	169
171	176	192	228	278	360

1.1.1	$\text{Mean/Gemiddelde} = \frac{2283}{12}$ $= 190,25$ Mean profit/Gemiddelde wins = R190 250,00 or 190,25 thousand rands	✓ sum/som ✓ answer ✓ answer in thousands of rands (3)
1.1.2	$\text{Median} = \frac{169 + 171}{2} = 170 \text{ thousand rands}$ $= \text{R}170\,000$	✓ answer (1)
1.2		✓ whiskers ✓ quartiles (2)
1.3	$\text{IQR} = Q_3 - Q_1$ $= 210 - 160 \text{ thousand rands}$ $= \text{R}50\,000$	✓ answer (1)
1.4	Skewed to the right or positively skewed.	✓ answer (1)
1.5.1	$\sigma = 67,04118759 \text{ thousand rands}$ $= \text{R}67\,041,19$	✓ answer (1)
1.5.2	$\bar{x} - \sigma = 123,21 \text{ thousand rands}$ For 2 months the profit was less than one standard deviation below the mean.	✓ lower limit ✓ answer (2)
		[11]

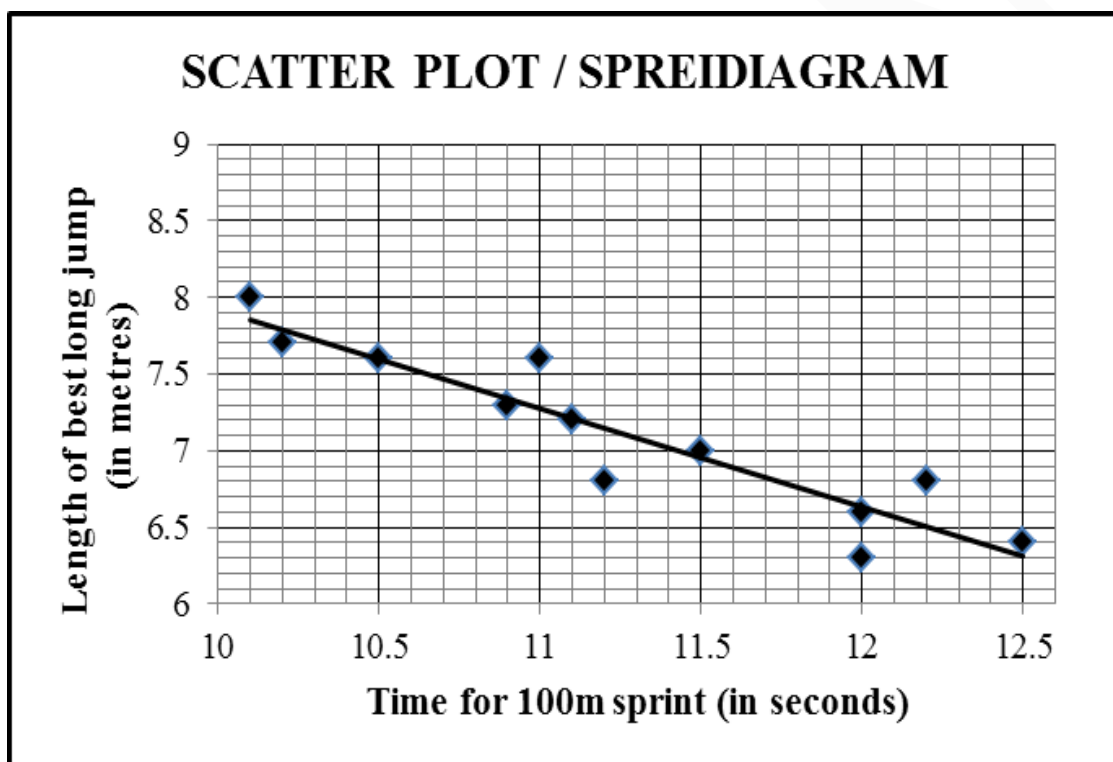
QUESTION/VRAAG 2

CHIRPS/TJIRPGELUIDE PER MINUTE/ PER MINUUT	AIR TEMPERATURE/ LUGTEMPERATUUR IN °C
32	8
40	10
52	12
76	15
92	17
112	20
128	25
180	28
184	30
200	35

2.1	SCATTER PLOT/SPREIDIAGRAM	3 marks: All points correct 2 marks: 6 – 9 points correct 1 mark: 3 – 5 points correct (3)
2.2	The points lie almost in a straight line. This suggests a very strong positive relationship between the number of chirps per minute and the temperature of the air. <i>Die punte lê amper in 'n reguitlyn, wat beteken dat daar 'n baie sterk positiewe verband tussen die aantal tjirpgeluide per minuut en die lugtemperatuur is.</i> OR/OF $r = 0,99$ so there is a very strong positive relationship between the number of chirps per minute and the temperature of the air. <i>$r = 0,99$, dus is daar 'n baie sterk positiewe verband tussen die aantal krieggeluide per minuut en die lugtemperatuur.</i>	✓ justify with straight line / <i>Motivering mbv reguitlyn</i> (1) ✓ link with / <i>gebruik $r = 0,99$ om te motiveer</i> (1)

QUESTION/VRAAG 1

Time for 100 m sprint (in seconds) <i>Tyd vir 100 m-naelloop (in sekondes)</i>	10,1	10,2	10,5	10,9	11	11,1	11,2	11,5	12	12	12,2	12,5
Distance of best long jump (in metres) <i>Afstand van beste sprong in verspring (in meter)</i>	8	7,7	7,6	7,3	7,6	7,2	6,8	7	6,6	6,3	6,8	6,4



1.1	$a = 14,343... = 14,34$ $b = -0,642... = -0,64$	✓✓ value of a ✓ value of b (3)
1.2	$y = 14,34 - 0,64(11,7)$ $= 6,85$ OR/OF $y = 6,83$ (calculator / sakrekenaar)	✓ substitution correctly ✓ answer (2) ✓✓ answer (2)
1.3	The gradient increases / <i>Die gradient neem toe</i> The point (12,3 ; 7,6) lies some distance above the current data. <i>/Die punt (12,3 ; 7,6) lê bokant die huidige data.</i>	✓ increases/ <i>neem toe</i> ✓ reasoning in words/ <i>redenasie in woorde</i> (2) [7]

QUESTION/VRAAG 2

12	13	13	14	14	16	17	18	18	18	19	20
21	21	22	22	23	24	25	27	29	30	36	

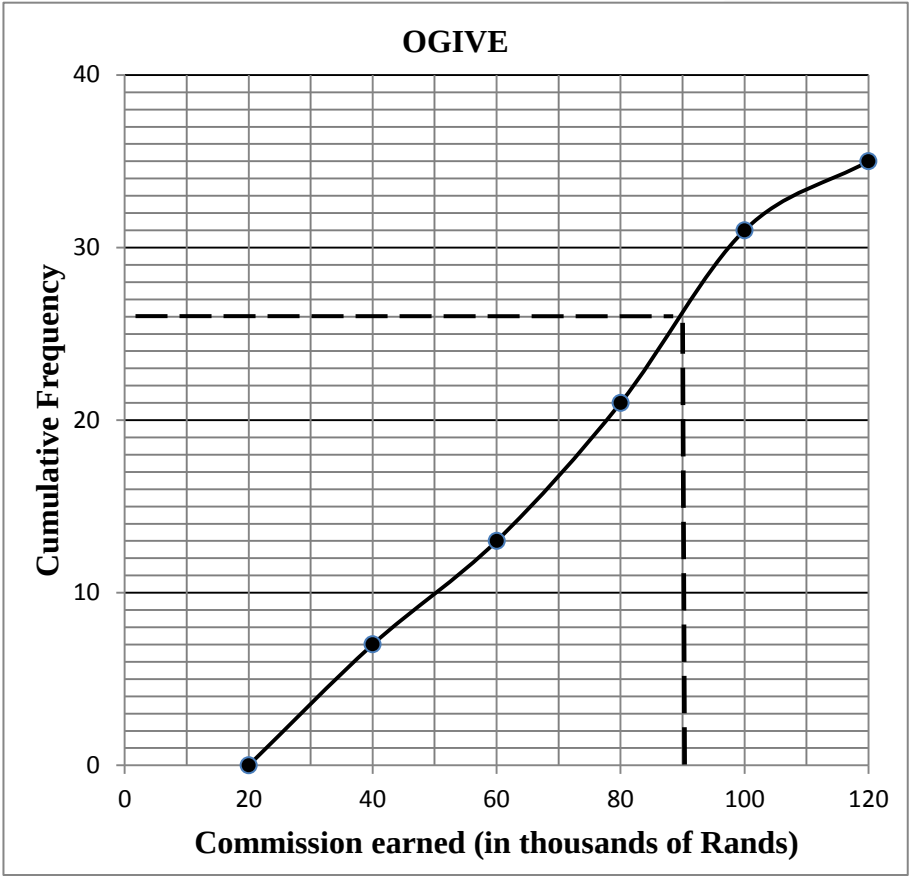
2.1.1	$\bar{x} = \frac{472}{23}$ $\bar{x} = 20,52$ seconds / <i>seconde</i>	✓ $\frac{472}{23}$ ✓ answer (2)
2.1.2	$Q_1 = 16$ $Q_3 = 24$ $IQR/IKO = Q_3 - Q_1$ $= 24 - 16 = 8$	✓ Q_1 ✓ Q_3 ✓ answer (3)
2.2	$20,52 + 5,94 = 26,46$ $\therefore > 26,46$ $\therefore$ 4 girls/ <i>dogters</i>	✓ 26,46 ✓ answer (2)
2.3	 12 14 16 18 20 22 24 26 28 30 36	✓ whiskers ending at 12 & 36 ✓ $Q_1 = 16$ & $Q_3 = 24$ (box) ✓ $Q_2 = 20$ (3)
2.4.1	Girls / <i>Meisies</i>	✓ answer (1)
2.4.2	Five-number summary of boys: (15 ; 21 ; 23,5 ; 26 ; 38) None of the boys / Nie een van die seuns nie 5 girls completed in less than 15 seconds which was the minimum time taken by the boys. <i>5 meisies voltooi in minder as 15 sekondes, wat die minimumtyd is wat die seuns geneem het.</i>	✓ answer ✓ reason/ <i>rede</i> (2) [13]

QUESTION/VRAAG/VRAAG 1

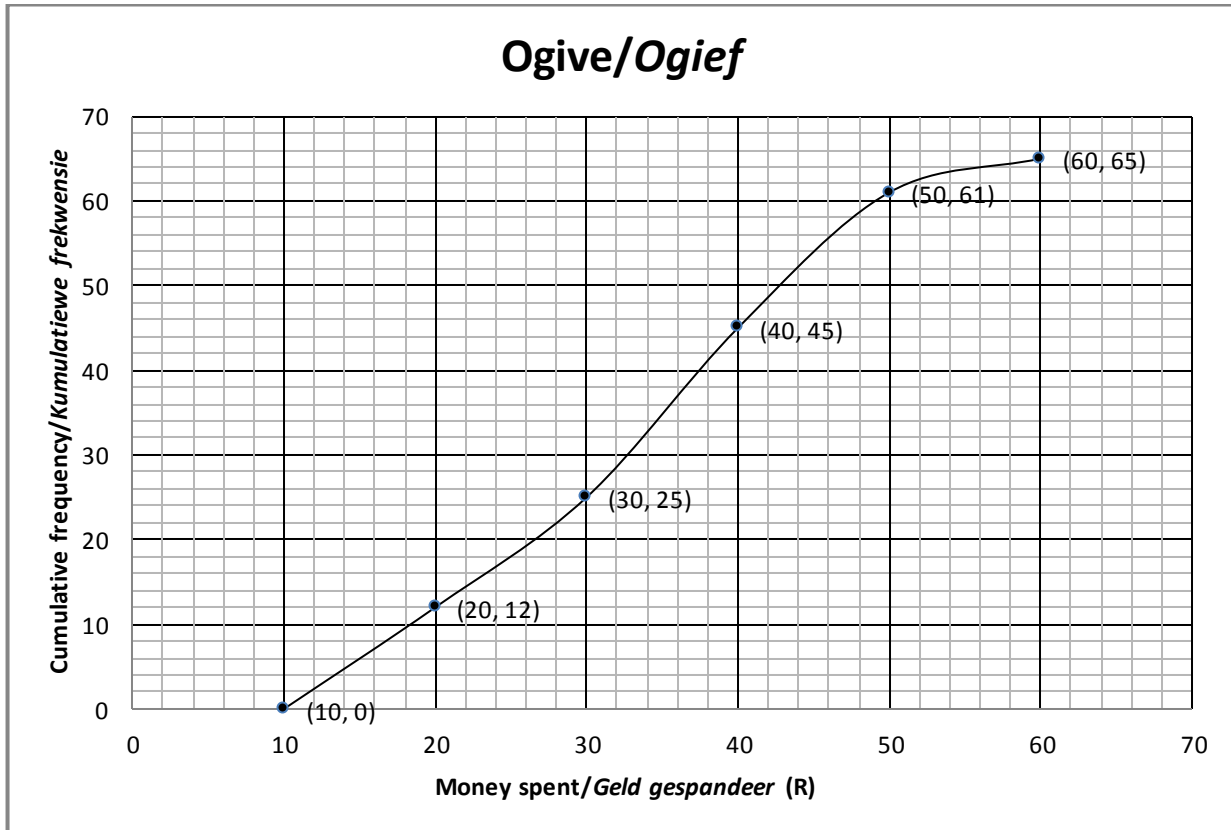
TIME TAKEN (IN HOURS)	5	7	5	8	10	13	15	20	18	25	23
COST (IN THOUSANDS OF RANDS)	10	10	15	12	20	25	28	32	28	40	30

1.1	$a = 4,806... = 4,81$ $b = 1,323... = 1,32$ $y = 4,81 + 1,32x$	✓ $a = 4,81$ ✓ $b = 1,32$ ✓ equation (3)
1.2	Cost = $25,974... = 25,97$ thousand rand (calculator) = R25 970 OR/OF $y = 4,81 + 1,32(16)$ $y = 25,93$ Cost = R25 930	✓ 25,97 ✓ answer (in Rands) (2) ✓ substitution ✓ answer (in Rands) (2)
1.3	$r = 0,949... = 0,95$	✓ answer (1)
1.4	$x = 0$ $y = 4,81$ OR (4,80647) $\therefore$ R4 810 OR R4806,47	✓ $x = 0$ ✓ answer (2) [8]

QUESTION/VRAAG 2

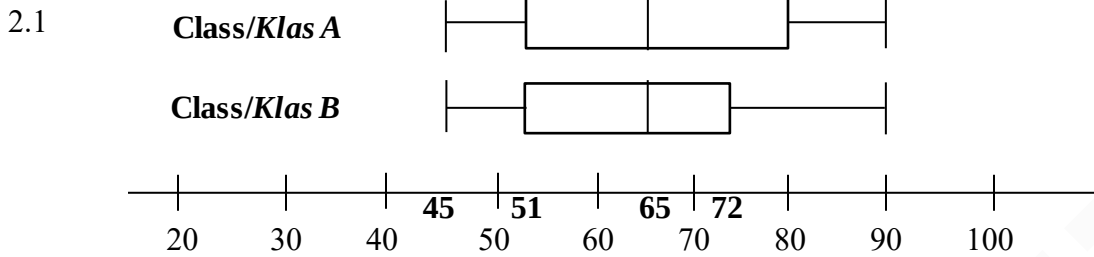
2.1	modal class: $80 < x \leq 100$	✓ correct class (1)																		
2.2	<table border="1"> <thead> <tr> <th>Commission earned (in thousands of Rands)</th><th>Frequency</th><th>Cumulative Frequency</th></tr> </thead> <tbody> <tr> <td>$20 < x \leq 40$</td><td>7</td><td>7</td></tr> <tr> <td>$40 < x \leq 60$</td><td>6</td><td>13</td></tr> <tr> <td>$60 < x \leq 80$</td><td>8</td><td>21</td></tr> <tr> <td>$80 < x \leq 100$</td><td>10</td><td>31</td></tr> <tr> <td>$100 < x \leq 120$</td><td>4</td><td>35</td></tr> </tbody> </table>	Commission earned (in thousands of Rands)	Frequency	Cumulative Frequency	$20 < x \leq 40$	7	7	$40 < x \leq 60$	6	13	$60 < x \leq 80$	8	21	$80 < x \leq 100$	10	31	$100 < x \leq 120$	4	35	✓ 13 ; 21 ✓ 31 ; 35 (2)
Commission earned (in thousands of Rands)	Frequency	Cumulative Frequency																		
$20 < x \leq 40$	7	7																		
$40 < x \leq 60$	6	13																		
$60 < x \leq 80$	8	21																		
$80 < x \leq 100$	10	31																		
$100 < x \leq 120$	4	35																		
2.3		✓ grounded/geanker ✓ upper limits/ boonste limiet ✓ cum frequency / Kum frekwensie ✓ shape/vorm (4)																		
2.4	No. of salesmen awarded bonuses: $35 - 26$ = 9 salesmen	✓ accept (25 – 27) ✓ accept (8 – 10) (2)																		
2.5	Estimated mean = $\frac{(30 \times 7) + (50 \times 6) + (70 \times 8) + (90 \times 10) + (110 \times 4)}{35}$ $= \frac{2410}{35}$ $= 68,86 \text{ thousand rand or R68 857,14}$ $= \text{R69 000 or 69 thousand rand}$	✓ top line using midpts & freq ✓ 2410 ✓ answer (nearest) (3) [12]																		

QUESTION/VRAAG 1



Amount of money/ Bedrag geld (in R)	$10 \leq x < 20$	$20 \leq x < 30$	$30 \leq x < 40$	$40 \leq x < 50$	$50 \leq x < 60$
Frequency Frekwensie	a	13	20	b	4

1.1	65 learners/ <i>leerders</i>	✓ answer (1)
1.2	Modal class/ <i>Modale klas</i> : $30 \leq x < 40$	✓ answer (1)
1.3	$a = 12$ $b = 61 - 45$ $= 16$	✓ answer ✓ answer (2)
1.4	No. of learners/ <i>Aantal leerders</i> = $65 - 54$ OR/OF $65 - 55$ $= 11$ $= 10$ Answer only: full marks	✓ 54 or 55 ✓ 11 or 10 (2) [6]

QUESTION/VRAAG 2

2.1.1	$\text{IQR of Class B/IKV van Klas B} = Q_3 - Q_1$ $= 72 - 51$ $= 21 \text{ marks/punte}$	✓ 72 and 51 ✓ 21 only (2)
2.1.2	Although the boxes contain the same number of data points, the marks for Class A are more widely spread./Alhoewel die monde dieselfde aantal datapunte bevat, is die punte van Klas A meer verspreid. OR/OF Although the boxes contain the same number of data points, the marks for Class B are more clustered./Alhoewel die monde dieselfde aantal datapunte bevat, is die punte van Klas B nader aan mekaar.	✓ ✓ Class A is more widely spread (2) ✓ ✓ Class B is more clustered (2)
2.1.3	Medians are the same/Mediane is dieselfde Ranges are the same OR Maximum and minimum values are the same/Variasiewydtes is dieselfde OF die maksimum en minimum waarde is dieselfde 75% of both classes obtained 51 and above/75% van albei klasse behaal 51 en meer.	✓ ✓ any TWO of the 3 reasons mentioned (2)

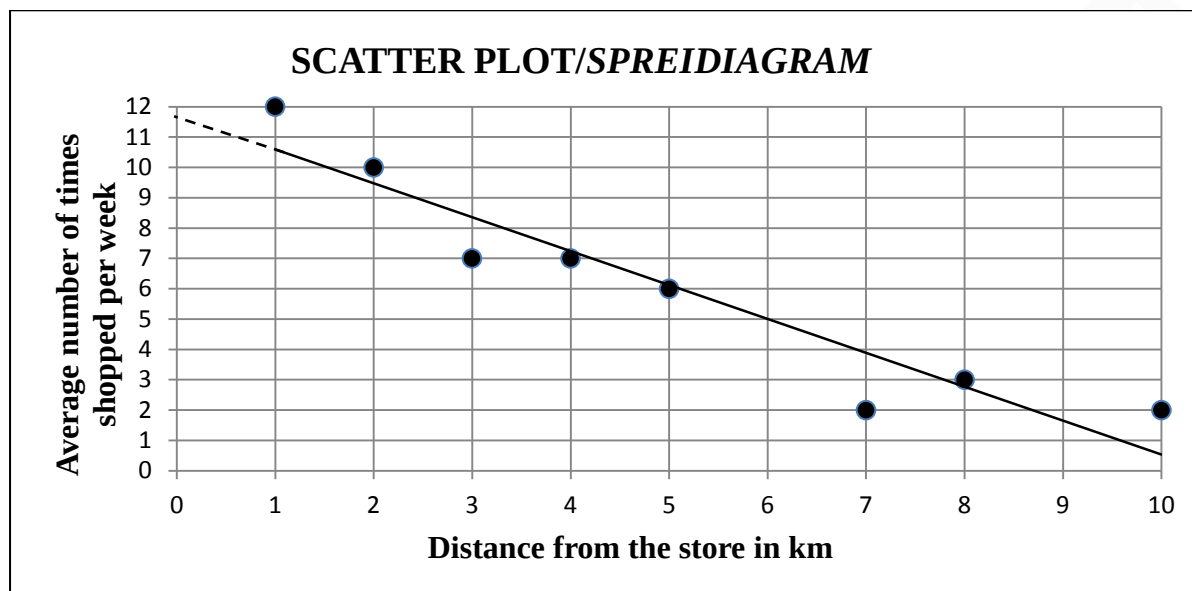
2.2

COUPLE/PAAR	1	2	3	4	5	6	7	8
JUDGE 1/ BEOORDELAAR 1	18	4	6	8	5	12	10	14
JUDGE 2/ BEOORDELAAR 2	15	6	3	5	5	14	8	15

2.2.1	$a = -0,03$ $b = 0,93$ $\hat{y} = -0,03 + 0,93x$	✓ value a ✓ value b ✓ equation (3)
2.2.2	$\hat{y} = -0,03 + 0,93(15)$ $= 13,92$ OR/OF 13,85 ≈ 14	✓ substitution ✓ answer (2)
2.2.3	Yes OR they are consistent, because $r = 0,9$. ($r = 0,89567\dots$)/Ja OF hulle is konsekwent, want $r = 0,9$. ($r = 0,89567\dots$)	✓ statement ✓ $r = 0,9$ (2) [13]

QUESTION/VRAAG 1

Distance from the store in km <i>Afstand vanaf die winkel in km</i>	1	2	3	4	5	7	8	10
Average number of times shopped per week <i>Gemiddelde aantal keer wat kopers die winkel per week besoek</i>	12	10	7	7	6	2	3	2



1.1	Strong/Sterk	✓ (1)
1.2	-0,95 (-0,9462..)	✓ (1)
1.3	$a = 11,71$ (11,7132...) $b = -1,12$ (-1,1176...) $\hat{y} = -1,12x + 11,71$	✓ value of a ✓ value of b ✓ equation/vgl (3)
1.4	$\hat{y} = -1,12(6) + 11,71$ $= 5$ times	✓ substitution ✓ answer (2)
1.5	On scatter plot/Op spreidiagram	✓✓ A line close to any 2 of the following points: (5 ; 6) or (10 ; $\frac{1}{2}$) or (6 ; 5) or (0 ; 11,7) (2) [9]

QUESTION/VRAAG 2

2.1	Positively skewed OR skewed to the right/ <i>positief skeep OF skeep na regs</i>	✓ answer (1)												
2.2	Range/ <i>Omvang</i> = 2,21 – 1,39 = 0,82 m	✓ subtract values ✓ answer (2)												
2.3	<table><thead><tr><th>Intervals <i>Klasse</i></th><th>Cumulative frequency <i>Kumulatiewe frekwensie</i></th></tr></thead><tbody><tr><td>$1,3 \leq x < 1,5$</td><td>24</td></tr><tr><td>$1,5 \leq x < 1,7$</td><td>95</td></tr><tr><td>$1,7 \leq x < 1,9$</td><td>133</td></tr><tr><td>$1,9 \leq x < 2,1$</td><td>156</td></tr><tr><td>$2,1 \leq x < 2,3$</td><td>160</td></tr></tbody></table>	Intervals <i>Klasse</i>	Cumulative frequency <i>Kumulatiewe frekwensie</i>	$1,3 \leq x < 1,5$	24	$1,5 \leq x < 1,7$	95	$1,7 \leq x < 1,9$	133	$1,9 \leq x < 2,1$	156	$2,1 \leq x < 2,3$	160	✓95 , 133, 156 ✓160 (2)
Intervals <i>Klasse</i>	Cumulative frequency <i>Kumulatiewe frekwensie</i>													
$1,3 \leq x < 1,5$	24													
$1,5 \leq x < 1,7$	95													
$1,7 \leq x < 1,9$	133													
$1,9 \leq x < 2,1$	156													
$2,1 \leq x < 2,3$	160													
2.4	OGIVE/OGIEF Heights (m)	✓ upper limits / <i>boonste limiete</i> ✓ cum f / <i>kum f</i> ✓ shape / <i>vorm</i> ✓ grounded <i>geanker</i> (4)												
2.5	method (using 80 to determine the height) 1,65 (accept any value between 1,6 and 1,69)	✓ method ✓ answer (2)												
2.6.1	The mean would change by 0,1 m <i>Die gemiddelde sal met 0,1 m verander</i>	✓ answer (1)												
2.6.2	No influence/change as there is no difference in variation of data./ <i>Geen invloed /verandering aangesien daar geen verskil in die variasie van die data is nie.</i>	✓ answer (1)												

[13]

[13]

NOTE:

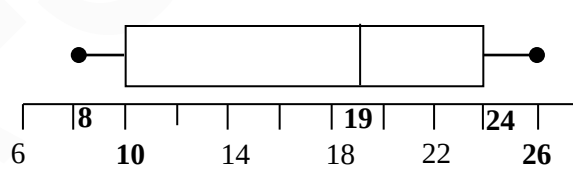
- If a candidate answered a question TWICE, mark only the FIRST attempt.
- If a candidate has crossed out an attempt to answer a question and did not redo it, mark the crossed-out version.
- Consistent accuracy applies in ALL aspects of the marking memorandum. Stop marking at the second calculation error.
- Assuming answers/values in order to solve a problem is NOT acceptable.

LET WEL:

- Indien 'n kandidaat 'n vraag TWEE keer beantwoord het, sien slegs die EERSTE poging na.
- As 'n kandidaat 'n poging om 'n vraag te beantwoord, doodgetrek en nie oorgedoen het nie, sien die doodgetrekte poging na.
- Volgehoue akkuraatheid is op ALLE aspekte van die memorandum van toepassing. Staak nasien by die tweede berekeningsfout.
- Om antwoorde/waardes om 'n probleem op te los, te veronderstel, word NIE toegelaat NIE.

QUESTION/VRAAG 1

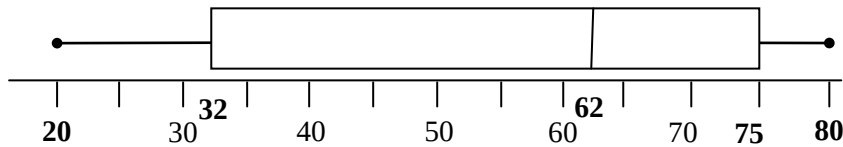
8	8	10	12	16	19	20	21	24	25	26
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1.1	$\text{Mean/Gemiddelde} = \frac{189}{11}$ $= 17,18$ Answer only: Full marks <i>Slegs antwoord: Volpunte</i>	✓ 189 ✓ answer (2)
1.2	Min = 8, max = 26 Median/Mediaan = 19 $Q_1 = 10, Q_3 = 24$ $\therefore (8 ; 10 ; 19 ; 24 ; 26)$	✓ min, max ✓ median ✓ Q_1 & Q_3 (3)
1.3		✓ box/boks/mond ✓ whiskers/snor (2)
1.4	The data is skewed to the left/Die data is skeef na links. OR/OF Negatively skewed/Negatief skeef	✓ answer (1) ✓ answer (1)
1.5	SD/SA = 6,46	✓✓ answer (2)
1.6	$17,18 + 6,46 = 23,64$ $\therefore$ 3 destinations/bestemmings	✓ interval ✓ answer (2) [12]

QUESTION/VRAAG 2

Temperature at midday (in °C) <i>Middaguur-temperatuur (in °C)</i>	18	21	19	26	32	35	36	40	38	30	25
Number of bottles of water (500 mℓ) <i>Getal bottels water (500 mℓ)</i>	12	15	13	31	46	51	57	70	63	53	23

2.1	(30 ; 53)	✓ answer (1)
2.2	$a = -38,51$ $b = 2,68$ $\therefore \hat{y} = 2,68x - 38,51$	✓ value a ✓ value b ✓ equation (3)
2.3	$\therefore \hat{y} \approx 36,53$ bottles OR/OF $\hat{y} \approx 2,68(28) - 38,51$ $\approx 36,53$ bottles	✓✓ answer (2) ✓ substitution ✓ answer (2)
2.4	Strong/Sterk The majority of the points lie close to the regression line./ <i>Die meerderheid punte lê naby die regressielyn.</i> OR/OF Strong/Sterk $r = 0,98$	✓ strong/sterk ✓ reason/rede (2) ✓ strong/sterk ✓ reason/rede (2)
2.5	Temperature cannot rise beyond a certain point as this would be life threatening OR there is only so much water one can consume before it becomes a risk to your health (hyponatremia)./ <i>Temperatuur kan nie hoër as 'n sekere punt styg nie, anders raak dit lewensgevaarlik. OF 'n persoon kan net 'n sekere hoeveelheid water inneem, anders raak dit 'n gesondheidsrisiko</i>	✓ reason/rede (1) [9]

QUESTION/VRAAG 1

1.1	The data is skewed to the left/ <i>Die data is skeef na links.</i> OR/OF The data is negatively skewed/ <i>Die data is negatief skeef.</i>	✓ answ/antw ✓ answ/antw (1)									
1.2	Range/ <i>Omvang</i> = 80 – 20 = 60	✓ max. – min. ✓ answ/antw (2)									
1.3	25% of the learners failed/ <i>van die leerders het gedruip</i>	✓ ✓ answ/antw (2)									
1.4	$54 = \frac{445 + T_4}{9}$ $T_4 = 41$ <table border="1"><tr><td>20</td><td>28</td><td>36</td><td>41</td><td>62</td><td>69</td><td>75</td><td>75</td><td>80</td></tr></table>	20	28	36	41	62	69	75	75	80	✓ 20 ✓✓ 41 ✓ 62 ✓ 75 ✓ 80 (6) [11]
20	28	36	41	62	69	75	75	80			

QUESTION/VRAAG 2

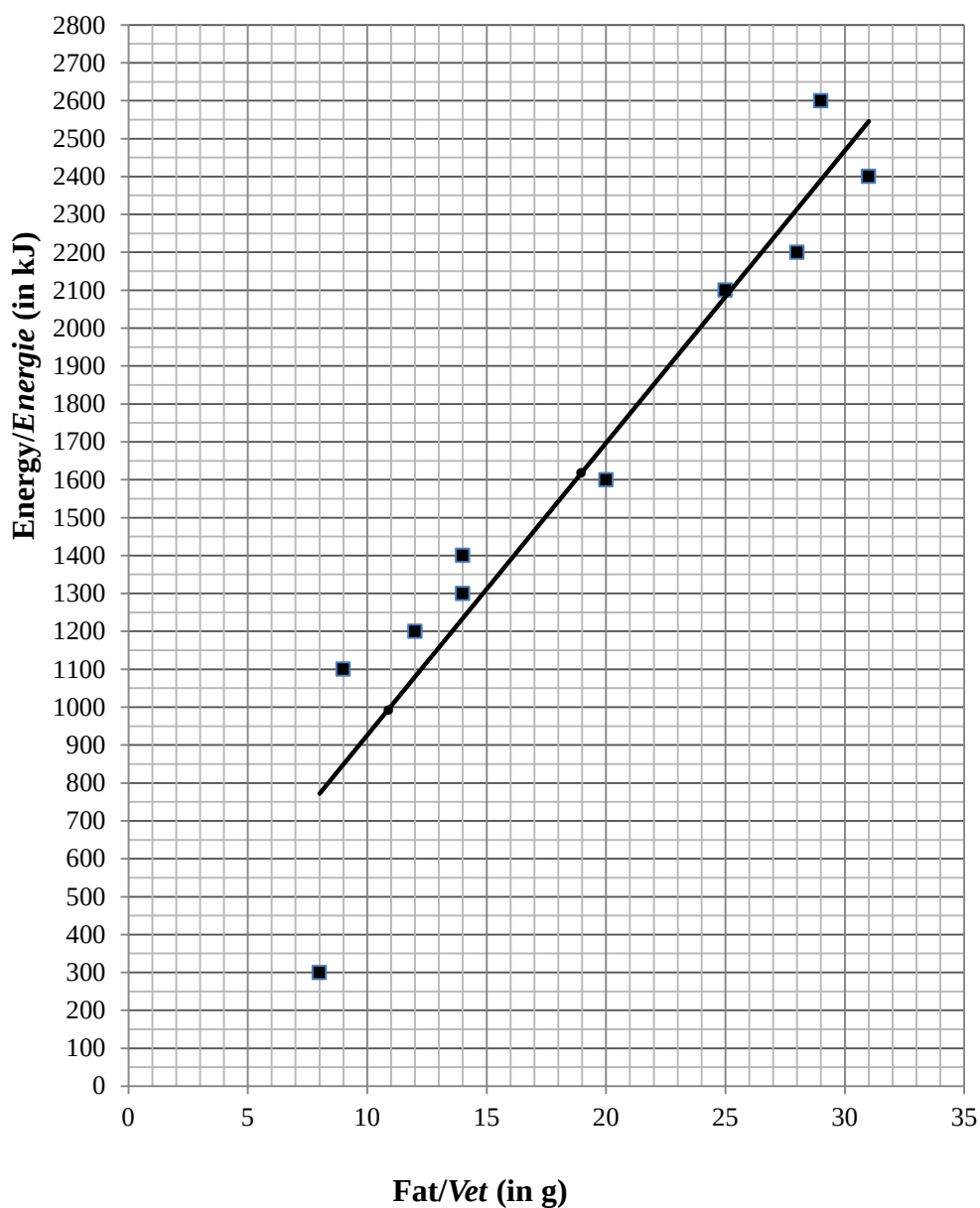
2.1	$\text{Mean/Gemiddelde} = \frac{2(15) + 8(25) + \dots + 2(85)}{60} = \frac{3080}{60}$ $= 51,33 \text{ messages per day/boodskappe per dag}$	✓ 3 080 ✓ $\frac{3080}{60}$ ✓ answ/antw (3)
2.2	OGIVE/OGIEF	✓ grounding at (10 ; 0) ✓ plotting at upper limits ✓ plotting. cumulative f ✓ smooth shape of curve ✓ geanker by (10 ; 0) ✓ stip by boonste limiete ✓ plot kumulatiewe f ✓ gladde vorm van kurwe (4)
2.3	Number of days/Getal dae = 60 – 46 (see on graph above/sien op grafiek hierbo) $= 14 \text{ days/dae}$ OR/OF $\text{Number of days/Getal dae} = 2 + 3 + \frac{1}{2} \times 18 = 14 \text{ days/dae}$	✓ 46 (accept 45 – 49) ✓ answ/antw (accept 11 – 15) (2) ✓ add correct values/tel korrekte waardes by ✓ answ/antw (2) [9]

QUESTION/VRAAG 1

Fat/Vet (in g)	9	14	25	8	12	31	28	14	29	20
Energy/Energie (in kJ)	1 100	1 300	2 100	300	1 200	2 400	2 200	1 400	2 600	1 600

1.1

Scatter plot/Spreidiagram



1.2.2

1.1

no marks:
0 – 2 points
correctly

✓ plotting
3 – 5 points
correctly

✓✓ plotting
6 – 9 points
correctly

✓✓✓ plotting
all 10 points
correctly

geen punte:
0 – 2 punte
korrek

✓ stip 3 – 5
pte korrek

✓✓ stip 6 – 9
pte korrek

✓✓✓ stip al
10 pte korrek

(3)

1.2.2

✓ y – int
close to
(0 ; 150)
✓ one pt
close to
(25 ; 2100)
or
(20 ; 1700)

(2)

1.2.1	$\hat{y} = 154,60 + 77,13(18)$ $= 1\,542,94 \approx 1\,500 \text{ kJ}$	✓ subst ✓ answ rounded off correctly/ <i>antw korrek</i> <i>afgerond</i> (2)
1.3	(8 ; 300)	✓ answ/antw (1)
1.4	$r = 0,9520... \approx 0,95$	✓✓ answ/antw (2)
1.5	very strong positive relationship/ <i>baie sterk positiewe verband</i>	✓ strong/ <i>sterk</i> (1) [11]

QUESTION/VRAAG 2

Sum of the values on uppermost faces/ Som van die waardes op boonste vlakke	Frequency/ Frekwensie
2	0
3	3
4	2
5	4
6	4
7	8
8	3
9	2
10	2
11	1
12	1

2.1	$\text{mean/gemiddelde} = \frac{2(0) + 3(3) + 4(2) + \dots + 12(1)}{30} = \frac{202}{30}$ $= 6,73$	✓ 202 ✓ answ/antw (2)
2.2	$\text{median/mediaan} = \frac{T_{15} + T_{16}}{2} = \frac{7 + 7}{2} = 7$	✓✓ answ/antw (2)
2.3	$\text{SD/SA} = 2,264\dots \approx 2,26$	✓✓ answ/antw (2)
2.4	$(6,73 - 2,26 ; 6,73 + 2,26)$ $= (4,47 ; 8,99)$ $\therefore 4 + 4 + 8 + 3 = 19 \text{ times/keer}$	✓ lower boundary ✓ upper boundary ✓ answ/antw (3) [9]

NOTE:

- If a candidate answers a question TWICE, only mark the FIRST attempt.
- If a candidate has crossed out an attempt of a question and not redone the question, mark the crossed out version.
- Consistent accuracy applies in ALL aspects of the marking memorandum.
- Assuming answers/values in order to solve a problem is NOT acceptable.

NOTA:

- As 'n kandidaat 'n vraag TWEEKEER beantwoord, merk slegs die EERSTE poging.
- As 'n kandidaat 'n poging om die vraag te beantwoord, doodgetrek het en nie dit oorgedoen het nie, merk die doodgetrekte poging.
- Volgehoue akkuraatheid word in ALLE aspekte van die nasienmemorandum toegepas.
- Aanvaarding van antwoorde/waardes om 'n probleem op te los, is ONaanvaarbaar.

QUESTION/VRAAG 1

1.1	$\bar{x} = \frac{3310}{21}$ $= 157,62$	Answer only: Full marks slegs antw: volpunte	$\checkmark \frac{3310}{21}$ $\checkmark 157,62$ (2)
1.2	(131 ; 142,5 ; 151 ; 173 ; 189)		$\checkmark 131$ and/ $\checkmark$ en 189 $\checkmark 142,5$ $\checkmark 173$ $\checkmark 151$ (4)
1.3			$\checkmark$ box/mond $\checkmark$ whiskers/ snor (2)
1.4	positively skewed/positief skeef OR/OF skewed to the right/skeef na regs		$\checkmark$ answer/ antwoord (1)
1.5	$\sigma = 17,27$		$\checkmark \checkmark$ answer/ antwoord (2)
1.6.1	$\bar{x} = 157,62 + p$		$\checkmark$ answer (1)
1.6.2	$\sigma = 17,27$		$\checkmark$ answer/ antwoord (1)

[13]

QUESTION/VRAAG 2

2.1	As the temperature increases, the sales of ice-creams increase/ <i>Soos die temperatuur styg, neem die verkope toe.</i> OR/OF As the temperature decreases, the sales of ice-creams decrease/ <i>Soos die temperatuur daal, neem die verkope af.</i>	✓ reason/ <i>rede</i> (1)
2.2	The liveable temperature cannot keep on increasing/ <i>Die leefbare temperatuur kan nie aanhou styg nie.</i>	✓ reason/ <i>rede</i> (1)
2.3	$a = -460,35$ $b = 30,09$ $\hat{y} = 30,09x - 460,35$ OR/OF $\hat{y} = -460,35 + 30,09x$ Answer only: Full marks <i>slegs antw: volpunte</i>	✓✓ $-460,35$ ✓ $30,09$ ✓ equation/ <i>vgl</i> (4)
2.4	$r = 0,96$	✓ $0,96$ (1)
2.5	There is a <u>very strong</u> positive relationship (correlation)/ <i>Daar is 'n baie sterk positiewe verband (korrelasie).</i>	✓ very strong/ <i>baie sterk</i> (1) [8]

NOTE:

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- Consistent accuracy applies in ALL aspects of the marking memorandum.
- Assuming answers/values in order to solve a problem is NOT acceptable.

NOTA:

- As 'n kandidaat 'n vraag TWEEKEER beantwoord, merk slegs die EERSTE poging.
- As 'n kandidaat 'n poging om die vraag te beantwoord, doodgetrek het en nie dit oorgedoen het nie, merk die doodgetrekte poging.
- Volgehoue akkuraatheid word in ALLE aspekte van die nasienmemorandum toegepas.
- Aanvaarding van antwoorde/waardes om 'n probleem op te los, is ONaanvaarbaar.

QUESTION/VRAAG 1

1.1	$\bar{x} = \frac{816}{12} = 68$	$\checkmark \frac{816}{12}$ $\checkmark 68$ (2)
1.2	$\sigma = 18,42$	$\checkmark$ answer/antw (1)
1.3	$(68 - 18,42 ; 68 + 18,42) = (49,58 ; 86,42)$ $\therefore$ 6 candidates had a mark within one standard deviation of the mean/6 kandidate het 'n punt binne een standaardafwyking vanaf die gemiddelde.	$\checkmark \checkmark$ interval $\checkmark$ answer/antw (3)
1.4	$a = 22,828... = 22,83$ $b = 0,66429... = 0,66$ $\therefore \hat{y} = 0,66x + 22,83$ OR/OF $\hat{y} = 22,83 + 0,66x$	$\checkmark$ value of a/ waarde van a $\checkmark$ value of b/ waarde van b $\checkmark$ equation/vgl (3)
1.5	$\hat{y} = 0,66x + 22,83$ $y = 0,66(60) + 22,83$ $62,43... \% \approx 62\%$ OR/OF $62,69\% \approx 63\%$	$\checkmark$ subs of 60 into equation $\checkmark$ answer/antw (2) $\checkmark \checkmark$ answer/antw (2)
1.6	(82 ; 62)	$\checkmark$ answer/antw (1) [12]

**APPARENTLY, THERE ISN'T A MEMO
FOR THE 2014 EXEMPLAR, DON'T ASK
WHY, I'M CERTAIN IT EXISTS
SOMEWHERE JUST CAN'T FIND IT. BUT
IF YOU'VE DONE ALL THE PAPERS
THUS FAR YOU SHOULD BE GOOD
WITHOUT THIS MEMO. (TRUST ME
BRO) :)**