

KWAZULU-NATAL PROVINCE

EDUCATION
REPUBLIC OF SOUTH AFRICA

NATIONAL SENIOR CERTIFICATE

GRADE 12

MATHEMATICAL LITERACY COMMON TEST APRIL 2021

MARKS: 100

TIME: 2 hours

This question paper consists of 11 pages, an Addendum with 1 Annexure and 1 Answer Sheet.

Copyright Reserved

Please Turn Over

INSTRUCTIONS AND INFORMATION

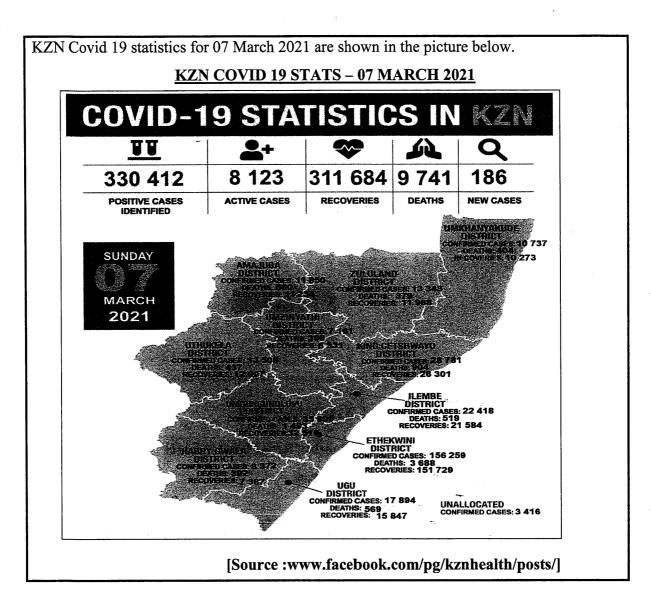
- 1. This question paper consists of FOUR questions. Answer ALL the questions.
- 2. The question paper consists of one ANNEXURE and one ANSWER SHEET.
 - 2.1 Use the **ANNEXURE** for QUESTION 2.1.
 - 2.2 Use the **ANSWER SHEET** for QUESTIONS 2.2.2 and 2.2.3.
 - 2.3 Write your surname and name in the spaces provided on the ANSWER SHEET. and hand in the ANSWER SHEET with your ANSWER BOOK.
- 3. Number the answers correctly according to the numbering system used in this question paper.
- 4. Start EACH question on a NEW page.
- 5. You may use an approved calculator (non-programmable and non-graphical), unless stated otherwise.
- 6. Show ALL calculations clearly.
- 7. Round off ALL final answers approximately according to the given context, unless stated otherwise.
- 8. Indicate units of measurement, where applicable.
- 9. Write neatly and legibly.

Mathematical Literacy Downloaded from Stanmorephysics.com

April 2021 Common Test

QUESTION 1

1.1



Use the given information above to answer the questions that follow.

1	.1.	 [s t]	he d	lata	abo	ove	num	erica	or	categorica	1?	(2	2)	

- 1.1.2 Arrange the number of deaths in the province in ascending order. (2)
- 1.1.3 How many districts are shown in the picture above? (2)
- 1.1.4 Which district has biggest number of confirmed cases? Write down the name of the district and the number of its confirmed cases. (2)
- 1.1.5 What was the minimum number of recorded recoveries in the province on the 7th of March 2021? (2)

1.2

•	He got onto the internet and used Standard Bank home loan e qualifies for. Given below is an extract from the home loan
Carculator.	
How much can you afford to b	orrow? You could borrow up to
MONTHLY INCOME BEFORE DEDUCTIONS •	* 730 554
+ Add co-applicant's income >	
	Your estimated monthly repayment will be
MONTHLY EXPENSES	P
R 6041	[₹] 7 050
Help me calculate expenses >	
VARIABLE INTEREST RATE	APPLY NOW ENQUIRIES
10	T&Cs for individuals >
96	T&Cs for legal entitles >
20	Real Cost of the Loan = RCL
Years '	Estimated Monthly Repayment = EMR
CALCULATE	Loan Amount = LA
Reset >	
	[Source: www.standardbank.co.za]

Use the information above to answer the following questions.

1.2.1 Convert the loan term to months.

(2)

- 1.2.2 Calculate what the real cost of the loan (RCL) will be.
 - You may use the formula: $RCL = EMR \times Loan term in months$.

(2)

- 1.2.3 What is the total interest that will be charged on the loan amount (LA) of R730 554?
 - You may use the formula: Total interest = RCL LA.

(2)

1.2.4 Calculate the monthly interest on the loan.

- (2)
- 1.2.5 How much of the estimated monthly repayment goes towards servicing the principal on the loan amount of R730 554?
- (2)
 - [20]

Download more resources like this on ECOLEBOOKS.COM

Mathematical Literacy 5
Downloaded from Stanmorephysics.com

April 2021 Common Test

QUESTION 2

2.1

Mr N. Biyela's electricity statement for 18 January 2021 to 15 February 2021 is shown on the ANNEXURE A.

Carefully study the statement in the ANNEXURE A and answer the following questions.

- 2.1.1 Calculate the electricity consumption (A). (2)
- 2.1.2 Use your answer from **2.1.1** and the given rate per kWh to calculate the current month's charges (**B**) in rand, excluding 15% VAT. (3)
- 2.1.3 Calculate the total current month's charges (C).

 You may use the formula: Total = B Sub total + VAT

 (2)

2.2

Mr Eric owns a barbershop and employs two barbers, each earning R5 500 per month. Other monthly fixed costs amount to R8 200 per month. On average, each barber does 20 haircuts per day and they work from Monday to Friday. A hair cut costs R50,00.

Use the given information above to answer the questions that follow.

- 2.2.1 Calculate the total monthly fixed cost for Mr Eric's shop. (2)
- 2.2.2 Complete the total income values on the provided ANSWER SHEET. (3)
- 2.2.3 The line graph for monthly fixed costs is drawn on the provided ANSWER SHEET. Draw the line graph for Total Income on the same answer sheet and mark the break-even point on your graph with **P**. (3)
- 2.2.4 Mr Eric claims that if each barber does at least 20 haircuts a day, the total profit per month will exceed R12 500. Use calculations to verify his claim.
 - You may use the formula: **Profit = Total Income Total Cost**. (5)

2.3

Maranatha Metal Polishing Company is based in Durban. Given below is the company's income and expenditure statement for December 2020.

INCOME (R)	INCOME (R)			
National Products (Local)	1 984 609	Salaries	1 362 912	
International Products (Exports)	3 055 713	Overtime	187 427	
		Fuel	191 102	
		Repairs & Services	115 346	
		Office Supplies	1 891	
		Cleaning Materials	5 007	
		Water & Electricity	18 238	
		Rent	47 311	
TOTAL:	5 040 322	TOTAL:	1 929 234	

Use the income and expenditure statement above to answer the following questions.

2.3.1 What percentage of total income is total expenditure?

(3)

2.3.2 Due to Covid-19, the export earnings for the company fell by 75% in January 2021 and local earnings decreased by 47%.

Calculate the profit/loss for the company in January 2021.

(7)

[30]

Mathematical Literacy Downloaded from Stanmorephysics.com

April 2021 Common Test

QUESTION 3

Amable is 32 years old and earns an annual taxable income of R425 648. She is married and pays medical aid for her husband and herself.

TABLE 1 below indicates rates of tax for individuals for the Tax year 2020/2021

TABLE 1: 2021 TAX YEAR (1 MARCH 2020 - 28 FEBRUARY 2021)

TAX BRACKET	TAXABLE INCOME (R)	RATES OF TAX (R)
1	1 – 205 900	18% of taxable income
2	205 901 – 321 600	37 062 + 26% of taxable income above 205 900
3	321 601 – 445 100	67 144 + 31% of taxable income above 321 600
4	445 101 – 584 200	105 429 + 36% of taxable income above 445 100
5	584 201 – 744 800	155 505 + 39% of taxable income above 584 200
6	744 801 – 1 577 300	218 139 + 41% of taxable income above 744 800
7	1 577 301 and above	559 464 + 45% of taxable income above 1 577 300

TAX REBATES

Tax Rebate	
	2021
Primary	R14 958
Secondary (65 and older)	R8 199
Tertiary (75 and older)	R2 736

MEDICAL AID CREDIT

Per month (R)	2021
For the taxpayer	R319
For the taxpayer and one dependant	R638
For each additional dependant	R215
FA.1 . 1.0	

[Adapted from:www.sars.gov.za]

Use TABLE 1 above to answer the questions that follow.

- 3.1.1 Name the tax bracket Amahle's annual taxable income falls into. (2)
- 3.1.2 Write down the tax rebate for the year and the monthly medical aid credit that Amahle qualifies for. (2)
- 3.1.3 Hence, calculate Amahle's monthly income tax payable. (8)

Copyright Reserved Please Turn Over

3.2

Use the information in TABLE 2 to answer the questions that follow.

Nkosi is flying to Johannesburg for business and wants to hire a car at the airport for 3 days. He has to choose from one of the two options. TABLE 2 below shows the two options available.

TABLE 2: COMPARISION OF CAR HIRE RENTAL FOR A SMALL CAR

OPTION 2			
BUDGET CAR HIRE Renault Kwid or similar			
			Price per day
Mileage:	200 km per day		
Customer review:	7,8 very good		
	Renault Kwi Price per day Mileage:		

- Calculate the difference in mileage for 3 days between the two options. (3) 3.2.1
- (2) Calculate the cost per day for Option 1. 3.2.2
- (2) Determine the cost per km for the Renault Kwid. 3.2.3
- The cost per km for the Renault Kwid is 81,27 % of that of the Volkwagen Polo. 3.2.4 (4) Verify, using a calculation if this is CORRECT.
- Aside from cost, what other factor would influence Nkosi's choice? (2) 3.2.5

[25]

Mathematical Literacy, Downloaded from Stanmorephysics.com

April 2021 Common Test

QUESTION 4

4.1

The world population review rates the following countries in TABLE 3 below as having the highest rate of obesity in the world.

BMI (Body mass index) is a measure that may be used to determine if an individual's weight status is healthy.

TABLE 3: MOST OBESE COUNTRIES 2021

COUNTRY	OBESITY RATE	BMI	POPULATION 2021
American Samoa	74,60%	34,9	55 100
Tokelau	74,40%	Not given	1 373
Naura	61,00%	32,5	10 876
Cook Islands	55,90%	33	17 565
Palau	55,30%	29,4	18 169
Marshal Islands	52,90%	29,2	59 610
Tuvalu	51,60%	29,3	11 931
Niue	50,00%	Not given	1 619
Tonga	48,20%	31,9	106 760
Samoa	47,30%	31,7	A

[Source: www.worldpopulationreview.com]

Use the information in TABLE 3 above to answer the questions that follow:

4.1.1 Is the data in TABLE 3 for the Obesity rate and BMI discrete or continuous?

Give a reason for your answer. (2)

4.1.2 Calculate the average obesity rate. (3)

4.1.3 Determine the median for the given BMI data. (3)

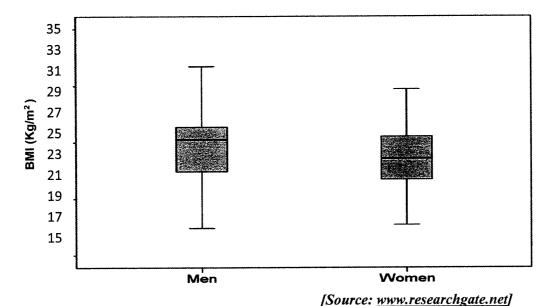
4.1.4 Determine A, the population of Samoa in 2021 if the total population is 303 152. (3)

4.1.5 List two factors that would contribute to the high obesity rate in these countries. (2)

Copyright Reserved Please Turn Over

4.2

The box and whisker plot below shows the BMI (Body mass index) of Men and Women.



•

Use the information above to answer the following questions

4.2.1 Identify Quartile 2 for the Men's BMI.

(2)

4.2.2 The average height of the men is 1,7 metres. Use your answer from **4.2.1** to determine the men's weight.

You may use the formula:

$$BMI = \frac{\text{weight in kilograms}}{\left(\text{height in metres}\right)^2}$$
(3)

4.2.3 A nurse stated that there is difference of 1 between the inter quartile range (IQR) for men and women.

Verify if this statement is CORRECT, showing all calculations.

You may use the formula:

$$IQR = Q3 - Q1 \tag{5}$$

4.2.4 Consider the men's BMI. Provide a reason why the men's BMI would be higher than the women?

(2)

[25]

TOTAL: [100]



NATIONAL SENIOR CERTIFICATE

GRADE 12

MATHEMATICAL LITERACY

ADDENDUM

COMMON TEST

APRIL 2021

This Addendum consists of 2 pages with 1 Annexure.

Copyright Reserved

ANNEXURE A Downloaded from Stanmorephysics.com **QUESTION 2.1**

Tax Invoice

Tax Invoice No.: 137000891

Mr N Biyela P. O. Box 1813

Durban 4 000 THE METRO BILL

REVENUE DEPARTMENT

P. O. Box 828, Durban. 4 000

Tel: (031) 324 5000 Fax: (031) 324 5111

E-mail: revline@durban.gov.za

Web: www.durban.gov.za

Council VAT Registration No.: 488 019 3505



Date	Account Number	VAT Number	Guarantee (R)	Deposit (R)
2021/02/21	29000137891	N/A	0,00	3, 500.00

Reference	Details	Amount (R)
	Balance brought forward	1, 247.19
	Payment – Thank you (D/Delay "00")	1, 250.00Cr
	Sub – total	2.81Cr
	Current month's charges	В
	VAT	249,10
	Total current month's charges	C

Current month's charges are due by 2021/02/26.

Reference: 29000137891, 4031, DURBAN

Residential 1 Phase - Scale 4

CT Ratio | 1.00000 | VT Ratio | 1.00000 | Installed Capacity | Rate (c)/kWh: 182,09c/kWh

Meter	Reg.	Date/Previous	Meter Reading	Date/Current	Meter Reading	Usage
A009	Dbn9.	18/01/2021	246 701 <i>kWh</i>	15/02/2021	247 613 <i>kWh</i>	\mathbf{A}

N.B: RESIDENTIAL SCALE 4 RATE IN cents (c)/kWh EXCLUDING VAT is 182,09.

Source: [www.durban.gov.za]

Download more resources like this on ECOLEBOOKS.COM

Mathematical Literacy ded from Stanmore physics.com

April 2021 Common Test

ANSWER SHEET

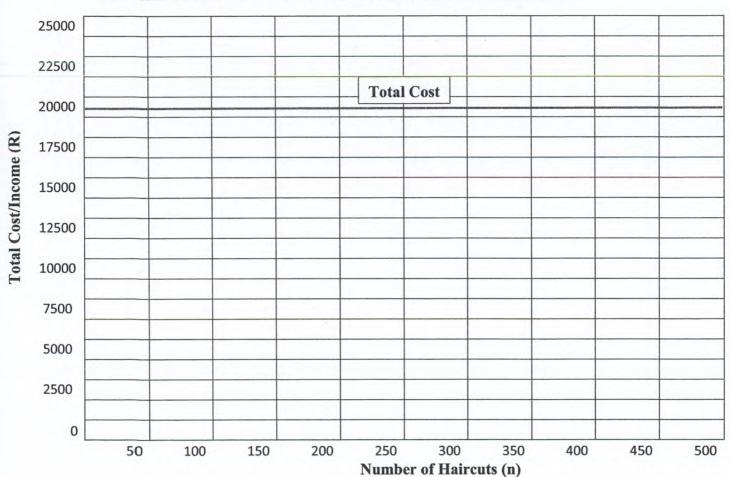
	CD IDE 10
NAME OF LEARNER:	GRADE 12

QUESTION 2.2.2

Total No. of Haircuts (n)	0	50	100	150	200	250	300	350	400	450	500
Total Cost (R)	19200	19200	19200	19200	19200	19200	19200	19200	19200	19200	19200
Total Income (R)	0	2 500	5 000	7 500	10 000						

QUESTION 2.2.3

TOTAL COST AND TOTAL INCOME FOR ERIC'S BARBESHOP







NATIONAL SENIOR CERTIFICATE

GRADE 12

MATHEMATICAL LITERACY

COMMON TEST

MARKING GUIDELINE

APRIL 2021

MARKS: 100

SYMBOL	EXPLANATION
M	Method
MA	Method with accuracy
CA	Consistent accuracy
A	Accuracy
С	Conversion
S	Simplification
RT/RG/RD/RM	Reading from a table/ graph/ diagram/Map
SF	Correct substitution in a formula
O	Opinion/ reason/deduction/example/Explanation
J	Justification
R	Rounding off
F	deriving a formula
AO	Answer only full marks
P	Penalty e.g. for units, incorrect rounding off etc.
NPR	No penalty for rounding / units

This marking guideline consists of 6 pages.

Copyright Reserved Please Turn Over

Download more resources like this on ECOLEBOOKS.COM Mathematical Literacy April 2021 Common Test

No.	ราชิญพูญ ออก ตรโรกา Stanmorephysics.com Solution	Explanation	T&L
1.1.1	Numerical✓✓A	2A correct answer (2)	D
			L1
1.1.2	379; 392; 396; 404; 437; 519; 560; 569; 904; 1 493; 3 688 ✓ ✓ A	2A ascending order (2)	D
1 1 2	11 districts ✓ ✓ RT	2DT seember of districts	L1 D
1.1.3	11 districts V R1	2RT number of districts (2)	L1
		(2)	LI
1.1.4	eThekwini✓ RT with 156 259 confirmed cases✓RT	1RT correct district	D
		1RT correct number of	
		cases	L1
		(2)	
1.1.5	6 531√√RT	2RT correct number	D
		(2)	L1
1.2.1	Time in months = $20 \times 12 \checkmark M$	1M multiplying by 12	M
	= 240 √ A	1A correct answer	L1
		(2)	
		AO	
1.2.2		CA from Q1.2.1	F
	Real Cost of Loan = $240 \times R7 \ 050 \checkmark MCA$	1MCA multiplying by 240	L1
	= R1 692 000 ✓ A	1A correct answer	
		$\mathbf{AO} \tag{2}$	
1.2.3	ÉcoleBooks	CA from 1.2.2	F
1.2.3	Total interest = R1 692 000 − R730 554 ✓ MCA	1MCA for subtracting	L1
	$= R961 446 \checkmark CA$	CA answer	
		(2)	
		AO	
1.2.4		CA from 1.2.3	F
	Monthly interest = R961 446 ÷ 240 ✓ MCA	1MCA dividing by 240	L1
	= R4 006,03 √ CA	1CA correct answer	
		(2)	
		AO	_
1.2.5	Doub of monthly government D7 050 D4 000 02 (MCA	CA from 1.2.4	F
	Part of monthly repayment = $R7.050 - R4.006,03\checkmark MCA$	1MCA subtracting	L1
	= R3 043,97 ✓ CA	1CA correct answer (2)	
		AO (2)	
		110	
			[20]

OUES	PANDER NAR	from Star	NSC – Marking Guidel IMOPEPHYSICS	line S. COM			
2.1.1	$A = 247 613 - 2000 = 912kWh\checkmark0$	246 701 ✓ MA				1MA subtracting correct values 1CA answer AO (2)	M L1
2.1.2	B = 912 × 182,0 = 166 066,08 = R1 660,66 ✓ OR B=912 ×1,8209 ✓ =R1 660,66 ✓ CA	sc√S ′C ′✓ MCA				CA from 2.1.1 1MCA multiplying 1S simplification 1C converting to rand OR 1MCA multiplying 1C conversion CA answer (3)	F L2
2.1.3	$C = R1 660,66 - (R2,81 + R249,10) \checkmark MCA$ = R1 906,95 \checkmark CA					CA from 2.1.2 1MCA subtracting 1CA answer (2)	F L1
2.2.1	Total fixed cost = $(2 \times R5500) + R8200 \checkmark MA$ = R19 200 \checkmark A					1MA for multiplying 5 500 by 2 1A answer AO (2)	F L1
2.2.2	Total No. of Haircuts Total Cost (R) Total Income (R)	250 300 19200 1920 ✓A 12500 1500	✓A	450 (S) 19200 22500	500 19200 ✓A 25000	3A 1 tick for correct pairs values (3)	F L2
2.2.3	TOTA 25000 22500 20000 17500 15000 12500 10000 7500 2500	Total Cos	· ·			2A for the correct line 1A for correct position for P	F
	0 50 3	100 150 200 Total Number		430 30	00	(3)	L3

Download more resources like this on ECOLEBOOKS.COM Mathematical Literacy April 2021 Common Test

NSC – Marking Guideline

2.2.4	NSC - Marking Guideline POWEN DE LO STONMO PONYSICS. COM	1MA multiplying by 20	F
2.2.4	= R40 000 CA	1MA multiplying by 20 1CA answer	Г
	Total expenses = R19 200	13.54	
	Profit = R40 000 − R19 200 ✓ MA = R20 800 ✓ CA	1MA subtracting 1CA answer	
	Mr Eric's claim is VALID✓0	1O opinion (5)	L4
2.3.1	Total Expenditure = $\frac{R1929234}{R5040322} \checkmark MA \times 100\% \checkmark MA$	1MA dividing 1MA multiplying	F
	= 38,28%✓A	1A correct answer	L2
		(3)	
2.3.2	75% of R3 055 713 = R2 291 784,75 ✓ MA	1MA multiplying by 75%	F
	January export earnings = R3 055 713 − R2 291 784,75 = R763 928,25 ✓ A		
	470/ of D1 004 (00 — D022 7((22./M	1A answer	
	47% of R1 984 609 = R932 766,23✓M	1M multiplying by 47%	
	Local earnings = R1 984 609 − R932 766,23 = R1 051 842,77 ✓ A		
	Total income for January = R1 051 842,77 + R763 928,25 = R1 815 771,02 A	1A answer	
	Loss for January = R1 815 771,02 − R1 929 234 ✓ M = R113 462,98 ✓ CA	1A addition and answer	
	,	1M subtracting	
	OR	1CA answer	
	January export earnings = 0,25 × R3 055 713 ✓ MA = R763 928,25 ✓ A		L3
	Local earnings = 0,53 × R1 984 609 ✓ MA = R1 051 842,77 ✓ A	1MA multiplying by 25% 1A answer	
	Total income for January = R1 051 842,77 + R763 928,25 = R1 815 771,02 ✓ A	1MA multiplying by 53%	
	Loss for January = R1 815 771,02 − R1 929 234 ✓ M = R113 462,98 ✓ CA	1A answer	
		1A addition and answer	
		1M subtracting 1CA answer	
		(7)	[30]
			լՆՍ]

QUES	STION 3 [25 MARKS]		
Q	Solution	Explanation	T &L
3.1.1	Tax Bracket 3 ✓ ✓ RT	2RT correct bracket (2)	F L1
3.1.2	Primary Tax Rebate R14 958 ✓ RT	1RT correct value	F
	Medical aid credit per month R638 ✓ RT	1RT correct value (2)	L1
3.1.3	\checkmark A Monthly tax = R67 144 + 0,31(R425 648 − R321 600) \checkmark SF	1A correct tax bracket 1SF annual taxable income	F L3
	= R99 398,88 ✓ CA	1CA simplification	
	= R99 398,88 – (R14 958) ✓MCA	1MCA subtracting rebate	
	= R84 440,88 √ CA	1CA simplification	
	= R84 440,88− (R7 656) ✓ MCA	1MCA subtracting medical	
	= R76 784,88	credit for the year	
	= R76 784,88 ÷ 12 ✓MA	1MA dividing by 12	
	= R6398,74 ✓CA	1CA answer (8)	
3.2.1	✓MA Difference in mileage = (200 × 3) – 500 ✓RT = 100 km✓A ÉcoleBooks	1MA multiplying by 3 1RT subtracting correct values 1A correct answer (3)	F L2
3.2.2	Cost per day for Option $1 = R1254,64 \div 3 \checkmark MA$ = $R418,21 \checkmark A$	1MA dividing by 3 days 1A answer (2)	F L2
3.2.3	Cost per km for Renault Kwid = R408,25 ÷ 200 ✓ MA = R2,04 per km ✓ A	1MA dividing by 200 1A answer	F L2
3.2.4	Cost per km for Polo = R1254,64 \div 500 \checkmark MA = R2.51 \checkmark A	1MA dividing by 500 1A correct answer	F L4
	$\% = \frac{2,04}{2,51} \times 100$ \checkmark MCA	1MCA dividing by 2,51	
	= 81,27 Statement is CORRECT✓O	1O opinion (4)	
3.2.5	Customer review of 8.8 that is excellent. ✓✓O	2O opinion (4)	F
	Any valid reason	(2)	L4
			[25]

Download more resources like this on ECOLEBOOKS.COM Mathematical Literacy 6 April 2021 Common Test NSC - Marking Guideline

OUT	STION OF STANMORED STANMOR		
QUES	STION # [25] MARKS I FOIL Staillion Epitysics. Coll		
4.1.1	Continuous ✓ A Measured value ✓ A		DH L1
4.1.2	Average obesity rate \checkmark MA = $(74,60+74,40+61+55,90+55,30+52,90+51,60+50+48,20+47,30)$	1MA adding correct [DH L2
	÷ 10✓MA = 57,12% ✓CA	1MA dividing by 10 1CA answer (3)	
4.1.3	Median BMI	Г	DH L2
	=29,2; 29,3; 29,4; 31,7; 31,9; 32,5; 33; 34,9 ✓ A	1A arranging in order	
	$=(31,7+31,9) \div 2\checkmark MA$	1MA dividing by 2 1CA answer	
	=31,8 √ CA	(3)	
4.1.4	Population of Samoa:		DH L3
	A=303 152 - (55100+1373+10876+17565+18169+59610+11931+ 1619+106760) ✓ MA =303 152 -283 003 ✓ M = 20149 ✓ CA	1MA adding correct values 1M subtracting 1CA answer	
44.5		(3)	
4.1.5	Unhealthy lifestyle ✓ O Lack of exercise ✓ O Any valid reason	1	DH L4
4.2.1	Q2 = 25 ✓ RG	\mathcal{E}	DH L2
4.2.2	$25 = \frac{\text{weight in kilograms}}{(1,7)^2} \checkmark \text{SF}$		DH L3
	$25 \times 1.7^2 = \text{weight in kg} \checkmark S$	1S simplification	
	Weight in kg=72,25kg✓CA	1CA answer (3)	
4.2.3	Men's IQR = 26 - 21 ✓ RG = 5 ✓ CA	\mathcal{E}	DH L4
	Women's IQR = 25 −20 ✓ RG = 5	1RG subtracting	
	Difference = $5-5$ = $0\checkmark$ CA	1CA answer	
	Statement is INCORRECT. ✓O	1O opinion Accept a leeway of 1 (5)	
4.2.4	Different levels of development ✓ ✓ O Any valid reason	2O opinion (2) I	DH L4
		[2	[25]

TOTAL: 100