GAUTENG PROVINCE
EDUCATION
REPUBLIC OF SOUTH AFRICA

GAUTENG DEPARTMENT OF EDUCATION

PREPARATORY EXAMINATION

2021

10601

MATHEMATICAL LITERACY

PAPER 1

TIME: 3 hours

MARKS: 150

10 pages + an addendum of 7 pages

MATHEMATICAL LITERACY: Paper 1

10601E

X05

This question paper consists of 10 pages.
An addendum of 7 pages is included as an insert in the question paper.

INSTRUCTIONS AND INFORMATION

1.   This question paper consists of FOUR questions. Answer ALL the questions.

2.   Use the ADDENDUM as follows:

   - Use ANNEXURE A to answer Question 1.3.
   - Use ANNEXURE B to answer Question 2.1.
   - Use ANNEXURE C to answer Question 2.2.
   - Use ANNEXURE D to answer Question 3.1.
   - Use ANNEXURE E to answer Question 3.2.
   - Use ANNEXURE F to answer Question 4.4.

3.   Number your answers correctly according to the numbering system used in this question paper.

4.   An approved calculator (non-programmable and non-graphical) may be used unless stated otherwise.

5.   Show ALL calculations clearly.

6.   Round-off ALL final answers appropriately according to the given context, unless stated otherwise.

7.   Indicate units of measurement, where applicable.

8.   Start EACH question on a NEW page.

9.   Write neatly and legibly.

QUESTION 1

1.1   Mr A Johnson receives his salary slip below.
       Study his salary slip to answer the questions that follow.

TABLE 1: MR. A. JOHNSON: SALARY SLIP

Multi-tanks SA
209 Robert Road
Industrial

Employee: Mr. A. Johnson   Pay date: 6 June 2020
ID number: 600610 5806 08 0   Pay cycle: monthly
Bank details: ABC bank   Tax number: 0244160775
               Valley Center
               Acc # 234987

Earnings	Amount	Deductions	Amount
Basic salary	R12 790,00	UIF	**(A)**

1.1.1   Who is Mr. Johnson's employer?   (2)

1.1.2   For what does the abbreviation UIF stand?   (2)

1.1.3   Calculate the UIF (the missing value **A**) on Mr. Johnson's salary.   (2)

1.1.4   During the COVID-19 pandemic Mr. Johnson's salary was reduced by 40%.
         What will be his new salary?   (2)

1.1.5   How will his reduced income affect his buying power?   (2)

1.1.6   During the lockdown Mr. Johnson was able to buy Sunlight Liquid at a
         reduced price of R21,50, after it had been marked down by 20%.
         Determine the original price before the discount.   (2)

1.1.7   Mr. Johnson's sister sends him £400. How much would this be in rand if the
         exchange rate is 1 South African Rand = £0,046?   (2)

1.2   During 2020, many COVID-19 positive cases were reported. The table below indicates the number of cases reported during June 2020. Refer to the table below and answer the questions that follow.

Case Data

PROVINCE	Total cases for 15 June 2020	Percentage total
Eastern Cape	10 597	14,4
Free State	512	0,7
Gauteng	12 193	16,6
KwaZulu-Natal	3 959	5,4
Limpopo	362	0,5
Mpumalanga	322	0,4
North West	1 177	1,6
Northern Cape	205	0,3
Western Cape	44 143	60,0
Unknown	63	0,1
Total	**A**	**100,0**

[Source: *www.slideshare.net*]

1.2.1   Explain the difference between *discrete* and *continuous* data.   (2)

1.2.2   Which province had the highest number of reported cases?   (2)

1.2.3   Determine the range of reported cases.   (2)

1.2.4   Determine the median of the reported cases, excluding the "unknown" province.   (2)

1.2.5   Calculate the missing value **A**, the total number of reported cases, in the table above.   (2)

1.3   Gauteng is one of the smallest provinces but with a large number of COVID-19 infections. Refer to ANNEXURE A in the ADDENDUM regarding the gender and ages affected by COVID-19 and answer the questions that follow.

1.3.1   Identify the gender that has the highest infection rate.   (2)

1.3.2   Name ONE other type of graph that can represent the age-related pie chart.   (2)

1.3.3   Which age group has the most infections?   (2)
                                                                                [30]

QUESTION 2

2.1

> Mrs Ndlovu, who is 58 years old, earns a monthly income of R60 000.
> Each month she contributes the following from her monthly income:
>
> - Medical aid for herself, her husband and two children
> - 7,5% of her basic income is contributed to a pension fund.
> - 1% of her basic income is contributed to the UIF (max. R148,72).
>
> Use the tax table on ANNEXURE B in the ADDENDUM to answer the questions that follow.

2.1.1   Explain what the tax threshold for people 65 years and younger means to a taxpayer. (2)

2.1.2   Calculate Mrs Ndlovu's annual taxable income. (5)

2.1.3   Determine Mrs Ndlovu's annual medical aid tax credits. (4)

2.1.4   Mrs Ndlovu stated that her monthly tax contribution is R 9 111,75.
Verify, showing ALL calculations, whether her statement is valid. (8)

2.2

> The reality is that education is expensive. Refer to the table of comparative education fees in ANNEXURE C in the ADDENDUM, to answer the questions that follow.

2.2.1   What is the difference between public primary school fees and private primary school fees for the year 2020? (3)

2.2.2   Minenhle's parents are planning on sending him to a private school and expect to pay R20 725 per month for the first 12 months that he is in high school. In what year will he start high school? (3)

2.2.3   Joshua's parents realised that education is expensive and started saving to start his university education in 2025.
At the end of 2021 they would have saved R88 653,77. They decided to invest this amount at 6,6% p.a. compounded interest for the 3 remaining years.
Joshua worked out during his Mathematical Literacy class that his parents will not have saved enough money by the end of 2024 and will have to add about R250,00.

Verify, showing ALL calculations, whether Joshua's calculations were valid. (7)

P.T.O.

2.3   Electricity can be purchased from Eskom in two ways, prepaid and post-paid.
Below is an adapted, comparative table to answer the questions that follow.

System name	Fixed monthly cost	Cost per unit (c/kWh)	
Prepaid	R200,00	70,855	
Post-paid	nil	0 – 50	69,36
		50,1 – 350	81,60
		350,1 – 600	127,02
Prices exclude VAT of 15%			

2.3.1   Determine the fixed monthly cost for the prepaid system.   (2)

2.3.2   If a household uses 286 kWh of electricity on the post-paid system, how
much would they pay for their electricity consumption, excluding VAT?   (5)

2.3.3   A household bought electricity for R720, including VAT, on the prepaid
system. Determine how much electricity they can use.   (5)

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PLEASE DETACH THIS ADDENDUM OF 7 PAGES.

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10601
MATHEMATICAL LITERACY
PAPER 1 ADDENDUM

7 pages

ANNEXURE A

Question 1.3

Statistics on the gender and age of COVID-19 cases reported in Gauteng during 2020

Age

ATEGORY NAME].
A

[CATEGORY NAME].
[VALUE]%

[CATEGORY NAME].
[VALUE]%

[CATEGORY NAME].
[VALUE]%

[CATEGORY NAME].
[VALUE]%

[CATEGORY NAME].
[VALUE]%

Gender

61.1

38.9

■ Males   ■ Females
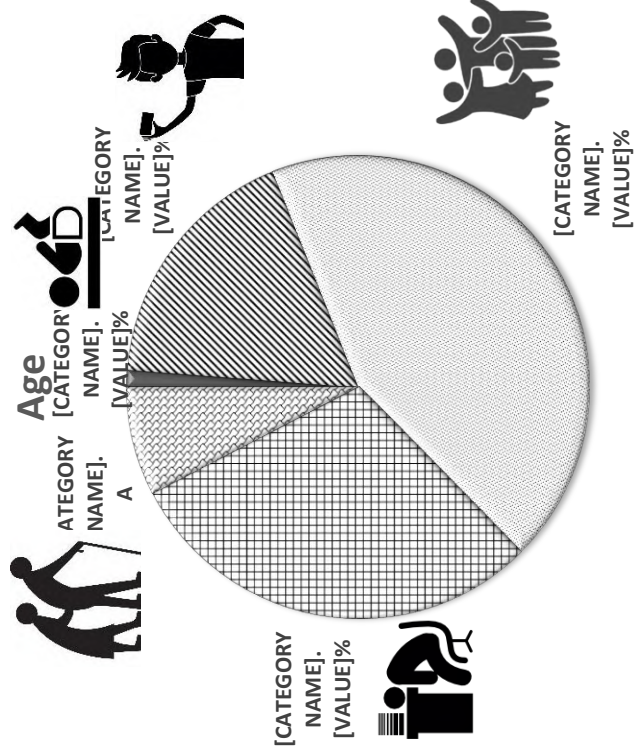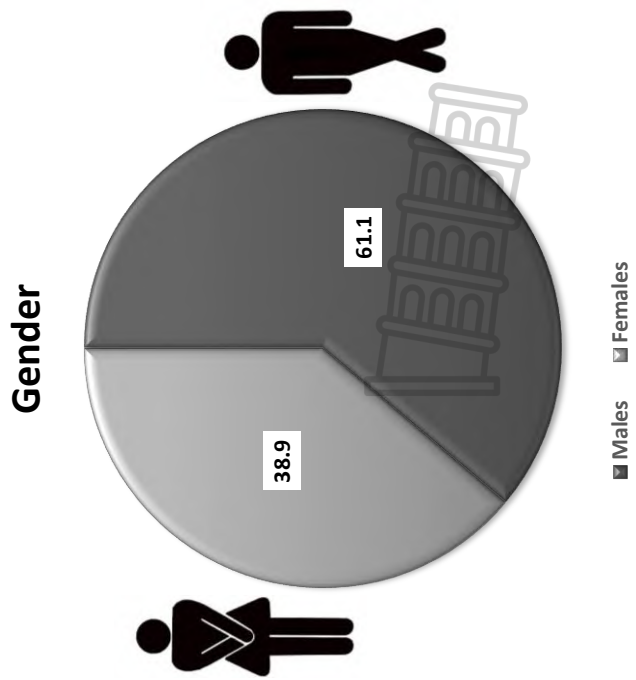
ANNEXURE B

Question 2.1

TAX TABLE

Taxable income	Tax rate
R0 − R205 900	18% of taxable income
R205 901 − R321 600	R37 062 + 26% of taxable income above R205 900
R321 601 − R445 100	R67 144 + 31% of taxable income above R321 600
R445 101 − R584 200	R105 429 + 36% of taxable income above R445 100
R584 201 − R744 800	R155 505 + 39% of taxable income above R584 200
R744 801 − R1 577 300	R218 139 + 41% of taxable income above R744 800
R1 577 301 and above	R559 464 + 45% of taxable income above R1 577 300

[https://www.allangray.co.za/latest-insights/personal-investing/2020-budget-speech-update/]

Tax thresholds

- R83 100 for taxpayers younger than 65

- R128 650 for taxpayers aged 65 to 74

- R143 850 for taxpayers aged 75 and over

Rebates

- R14 958 per year for all individuals

- R8 199 for taxpayers aged 65 and over

- R2 736 for taxpayers aged 75 and over

Medical tax credits

- R319 per month per beneficiary for the first two beneficiaries

- R215 per month for each additional beneficiary

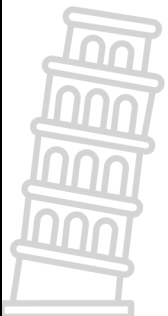**P.T.O.**

ANNEXURE C

Question 2.2

COMPARATIVE EDUCATION FEES

EXPECTED AVERAGE COST OF ONE YEAR OF EDUCATION	2020	2025	2030	2035
PUBLIC PRIMARY OR HIGH SCHOOL	R 37 700	R 63 300	R 97 400	R 149 800
PRIVATE PRIMARY SCHOOL	R 92 400	R 154 900	R 238 400	R 366 700
PRIVATE HIGH SCHOOL	R 148 300	R 248 700	R 382 700	R 588 800
UNIVERSITY	R 64 200	R 107 600	R 165 600	R 254 700

ANNEXURE D

Question 3.1

PERCENTAGE MATRIC PASS RATE FROM 2009 TO 2018

Bar graph showing PERCENTAGE PASS RATE:
- 2009: 60,6
- 2010: 67,8
- 2011: 70,2
- 2012: 73,9
- 2013: 78,2
- 2014: 75,8
- 2015: 70,2
- 2016: 72,5
- 2017: 75,1
- 2018: 78,2

■ PERCENTAGE PASS RATE

MATHEMATICAL LITERACY	10601/21	6
(Paper 1) ADDENDUM		
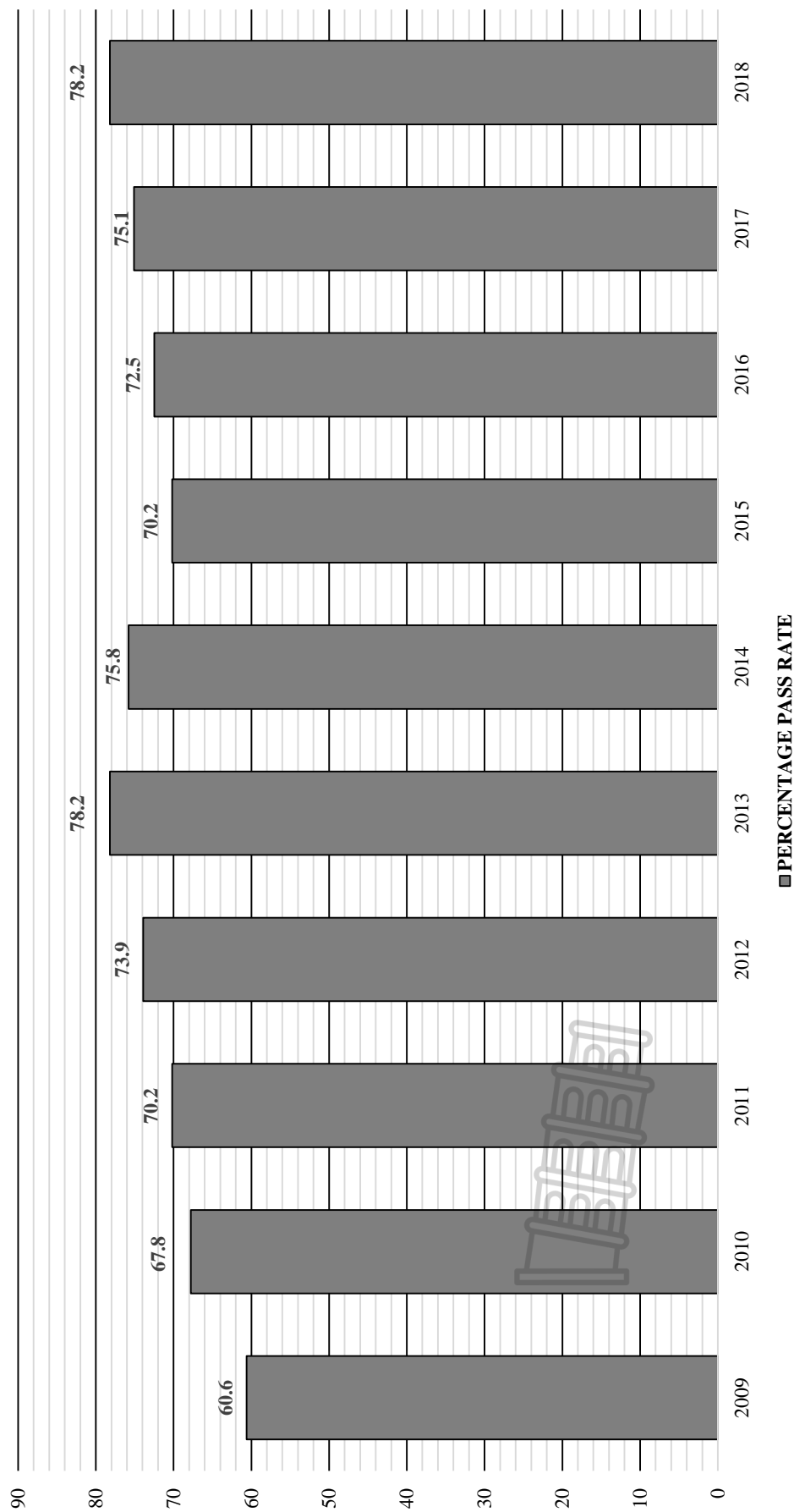
ANNEXURE E

Question 3.2

ORDINARY PASS VS. UNIVERSITY ENTRANCE

PERCENTAGE PASS RATE

	2015	2016	2017	2018
☐ UNIVERSITY ENTRANCE	30,2	35,2	36,1	38,1
⊞ ORDINARY PASS	40	37,3	39	40,1

P.T.O.
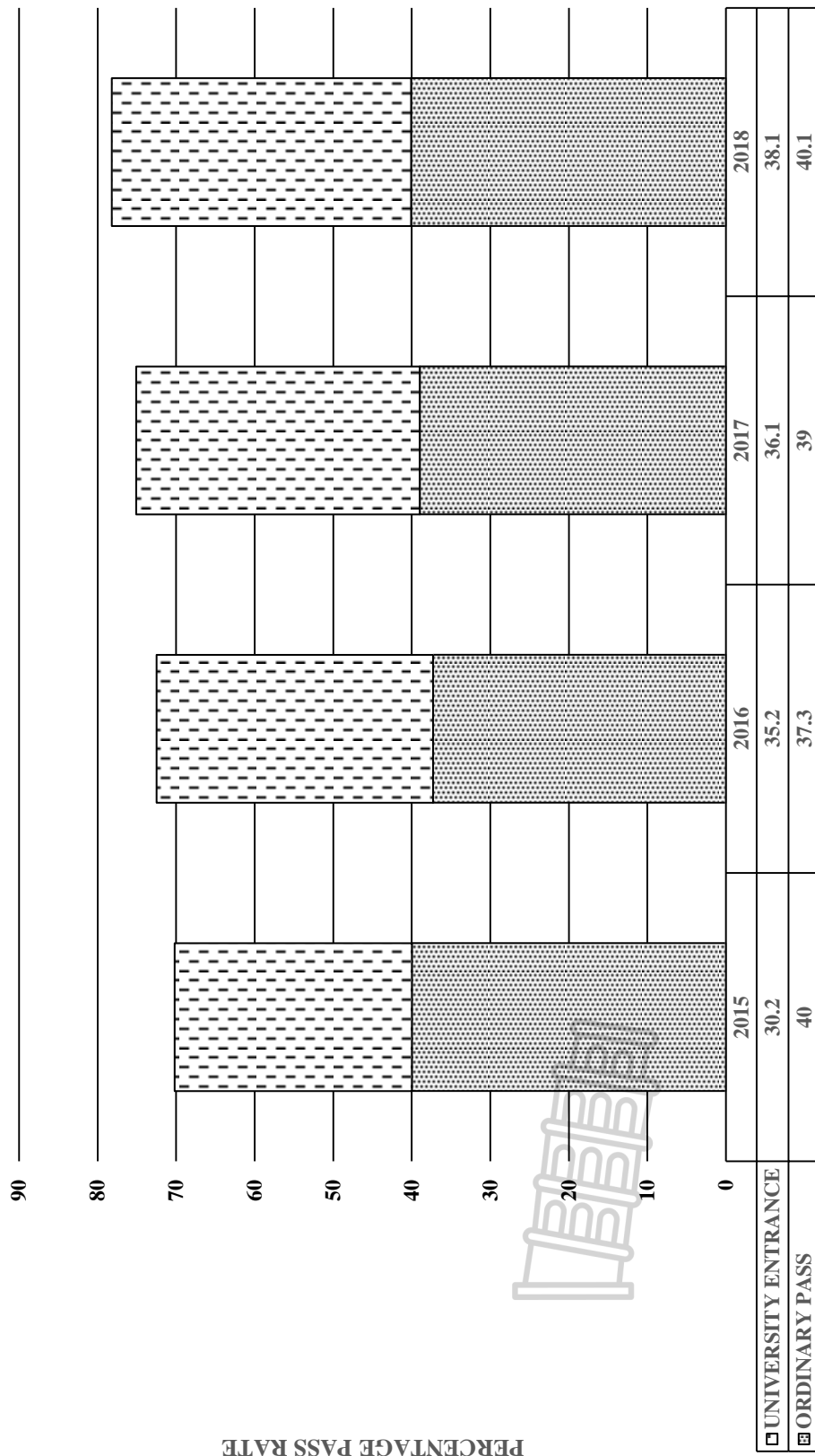
ANNEXURE F

Question 4.4

NUMBER OF LEARNERS IN GRADE 11 AND NUMBER THAT PASSED GRADE 12

Category	Value
GR. 11 IN 2014	858 769
PASSED MATRIC IN 2015	644 536
GR. 11 IN 2015	890 971
PASSED MATRIC IN 2016	610 178
GR. 11 IN 2016	864 618
PASSED MATRIC IN 2017	534 484
GR. 11 IN 2017	869 513
PASSED MATRIC IN 2018	512 735
GR. 11 IN 2018	827 677
PASSED MATRIC IN 2019	501 303
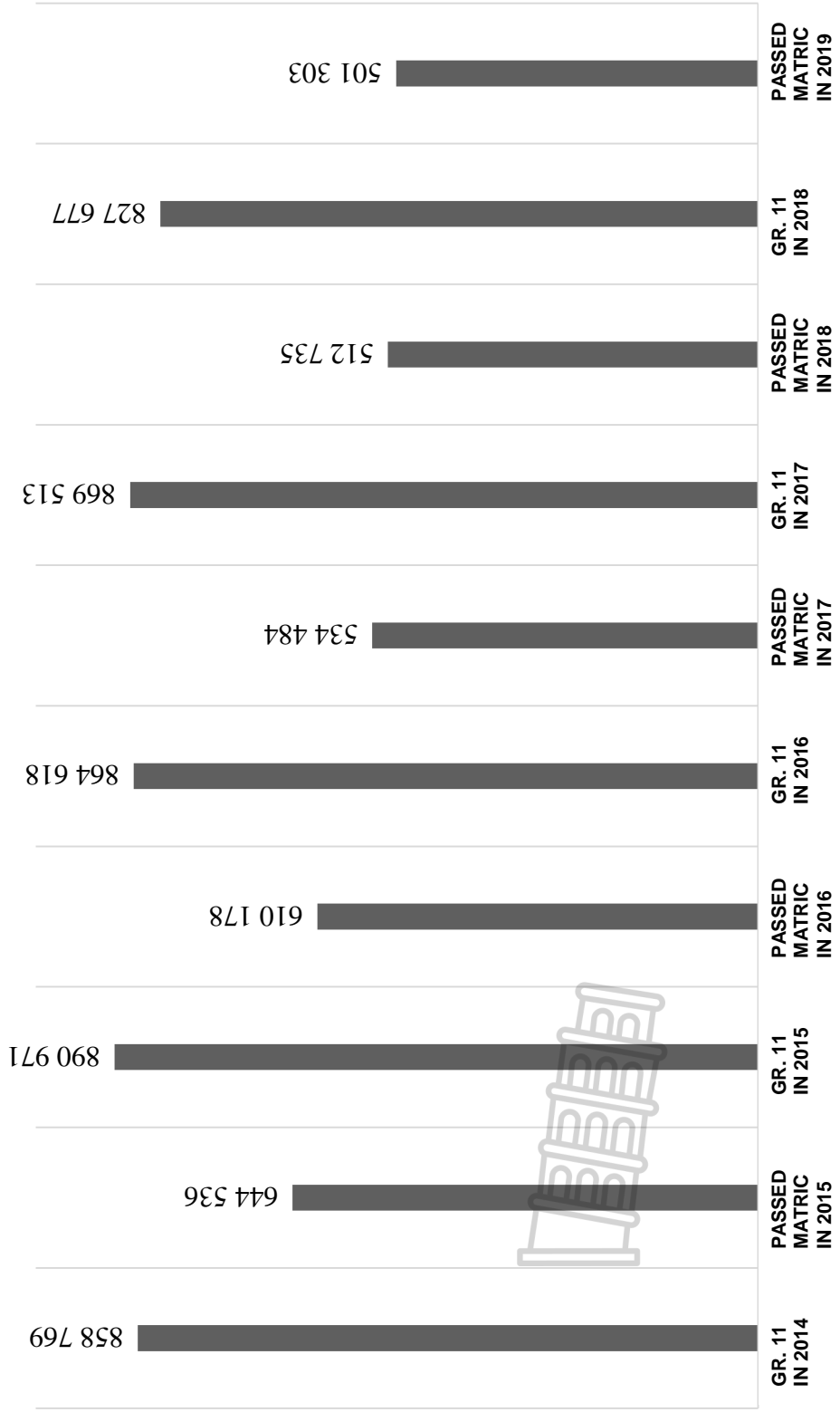
END

QUESTION 3

3.1 | John decided to do some research on past matric results. He found two graphs; one representing the overall matric pass rate from 2009 to 2018 (ANNEXURE D) and one representing ordinary passes vs university passes (ANNEXURE E).

Study ANNEXURE D in the ADDENDUM to answer the questions that follow.

| 3.1.1 | Determine the range of the overall matric pass rate from 2009 to 2018. | (3) |

| 3.1.2 | Determine the mode of the overall matric pass rate from 2009 to 2018. | (2) |

| 3.1.3 | Determine the median of the overall matric pass rate from 2009 to 2018. | (3) |

| 3.1.4 | Determine whether the data from the overall matric pass rate is discreet or continuous. Justify your answer. | (3) |

| 3.1.5 | Determine the IQR (Interquartile Range) of the overall matric pass rate from 2009 to 2018. | (3) |

| 3.1.6 | Explain what the 3rd Quartile value (Q3) represents. | (2) |

| 3.1.7 | Determine the probability of selecting a year with a pass rate of less than 70,3%. Leave your answer in a simplified fraction form. | (3) |

3.2 | Study ANNEXURE E in the ADDENDUM to answer the questions that follow.

| 3.2.1 | Describe the trend of the ordinary pass rate and the university entrance pass rate separately. | (4) |

| 3.2.2 | If the data collected from the ordinary and university entrance pass rate was done in Gauteng, explain whether this data is biased or valid for the country. | (2) |

| 3.2.3 | Construct a questionnaire with 4 questions that you would ask a learner who achieved a university entrance. | (4) |

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P.T.O.

QUESTION 4

4.1 | Sasha and Leila decided to watch the movie Black Panther. The movie, which was released on 29 January 2018, registered huge sales of $1 348 258 224 by 31 March 2018. The total cost of producing the Black Panther movie was quoted at $200 million, excluding marketing costs.
>
> [Resource: *https:// medium.com/@vrendermarketing/what-did-it-cost-to-make-black-panther*]

4.1.1 Determine how much money (in $) was earned per day from 29 January 2018 to 31 March 2018. (Round-off your answer to the nearest million $.) (4)

4.1.2 If 60 tickets were sold per day and each ticket costs $76, determine how much money the cinema made from 29 January to 31 March 2018. (3)

4.1.3 If the income in dollars was $282 720, what would the rand value be if the exchange rate is $1 = R11,8321? (2)

4.1.4 Lockdown Level 2 Regulations stated that although cinemas could operate, they were not to exceed 40% of their capacity.
If a movie ticket is R120 and a cinema has a maximum capacity of 60 people, prove (showing ALL calculations) that the loss of income is R4 320. (3)

4.2 | Mrs McKenzie and her family went to Starland to do some stargazing while they were in Sutherland. John, the owner, bought the property just outside Sutherland as an investment in 2015. He organises a stargazing tour on his property each evening.
>
> Starland has an FNB Business Account, which charges the following service fees:

FNB Business Account: Pay-as-you-use pricing option	
Transaction	**Service Fee**
Monthly account fee	R200
Cash deposit fee at FNB branch	
Minimum fee per deposit of less than R5 000	R30,00
Value of deposit	**Deposit fee at FNB of more than R5 000**
R5 000 – R14 999,99	R8,40 + R1,49 per R100 or part thereof

4.2.1 What is the monthly account fee on this account? (2)

4.2.2 When will the client have to pay the R30,00 minimum fee? (2)

P.T.O.
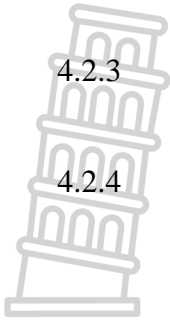
4.2.3   Calculate the total cost, in bank fees, to the business when John deposits
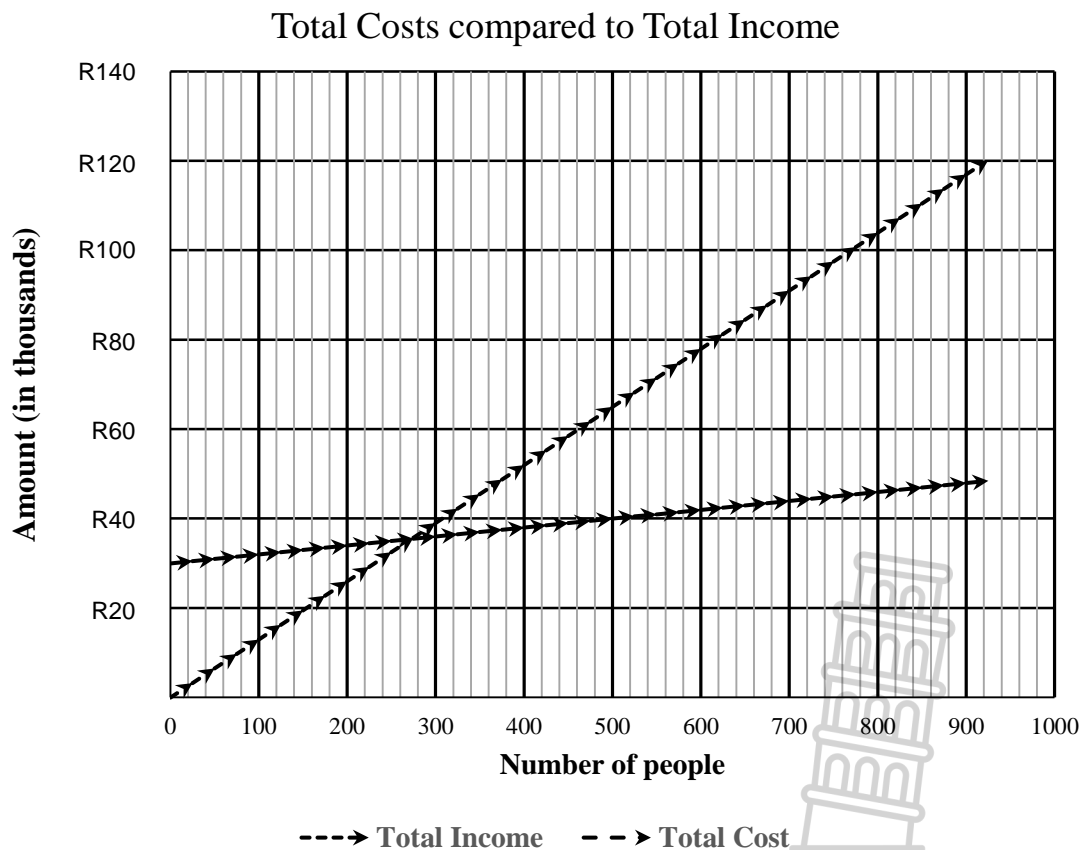R11 300,00 at an FNB branch.   (2)

4.2.4   The FNB Business account pays 2,4% interest per annum. The interest
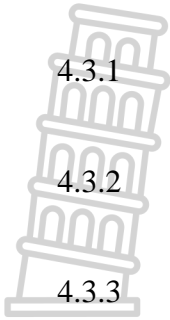is compounded monthly.

(a)   Calculate the monthly interest rate.   (3)

(b)   Calculate how much interest John will earn on R11 300,00 if
he cashes out his account in 2 months.   (5)

4.3   Starland made a profit of R210 000 during the past year. Starland has a fixed
expense cost of R30 000. Refer to the graph below representing the total income
and expenses to answer the questions that follow.

Total Costs compared to Total Income

Amount (in thousands)

R140
R120
R100
R80
R60
R40
R20

0   100   200   300   400   500   600   700   800   900   1000

Number of people

- - -➤ **Total Income**   - - ➤ **Total Cost**

| 4.3.1 | Use the graph to show that the income per person, that John charges for stargazing, is R130 rounded-off to the nearest ten rand. | (3) |

| 4.3.2 | The total expenses for 500 people is R40 000. Calculate the cost per person for an evening of stargazing. | (4) |

| 4.3.3 | Since John charges R130 per person for stargazing, calculate his percentage profit for a stargazing tour per person. | (3) |

4.4 | Mr. McKenzie decided to check learners' progress from 2014 to 2019 since his child is currently in Grade 11 and he would like to know the probability of his child going to Grade 12. Refer to ANNEXURE F in the ADDENDUM to answer the questions that follow. |

| 4.4.1 | Sort the data for the Grade 11s and the Grade 12s in ascending order, separately. | (2) |

| 4.4.2 | Determine Quartile 1 (Q1) and Quartile 2 (Q2) of the Grade 12s. | (4) |

| 4.4.3 | Determine the modal number of the Grade 11 passes. | (2) |

| 4.4.4 | Determine the mean of the Grade 12s who passed. | (3) |

[47]

TOTAL: 150

END

GAUTENG DEPARTMENT OF EDUCATION

PREPARATORY EXAMINATION

2021

MARKING GUIDELINES

MATHEMATICAL LITERACY P1 (10601)

Codes	Explanation
M	Method
MA	Method with Accuracy
CA	Consistent Accuracy
A	Accuracy
C	Conversion
D	Define
J	Justification/Reason/Explain/Conclusion
S	Simplification
RT/RD/RG	Reading from a table OR a graph OR a diagram OR a map OR a plan
F	Choosing the correct formula
SF	Substitution in a formula
O	Opinion
P	Penalty, e.g. for no units, incorrect rounding-off, etc.
R	Rounding-off
NP	No penalty for rounding-off OR omitting units

KEY TO TOPIC SYMBOLS:

F = Finance; M = Measurement; MP = Maps, Plans and other representations.
DH = Data Handling; P = Probability

22 pages

QUESTION 1

Q	ANSWER	EXPLANATION		LEVEL
1.1				
1.1.1	Multi-tank SA ✓✓A	2 A Correct answer	(2)	F1
1.1.2	Unemployment Insurance Fund✓✓ A	2A Correct answer	(2)	F1
1.1.3	✓MA 1% × R12 790 = R127,90 ✓A **OR** $\frac{1}{100}$ × R12 790 ✓MA = R127,90 ✓A	1 MA Multiplying by 1% 1 A Answer	(2)	F1
1.1.4	✓MA R12 790 × $\frac{100-40}{100}$ = R7 674 ✓ A **OR** ✓MA R12 790 × $\frac{60}{100}$ = R7 674 ✓ A **OR** R12 790 × $\frac{40}{100}$ = R5 116 R12 790 – R5 116 ✓MA = R7 674 ✓A	1 MA Multiplying by 60% 1 A Correct answer 1 MA Multiplying by 60% 1 A Correct answer 1MA Subtracting the correct amount 1A Correct answer	(2)	F1

2

Q	ANSWER	EXPLANATION		LEVEL
1.1.5	He will have less money to spend. ✓✓J **OR** His buying power will be reduced. **OR** He will buy less goods/food/petrol.	2J Justification **Accept any reasonable/ valid answer**	(2)	F1
1.1.6	✓MA R21,50 × $\frac{100+20}{100}$ = R25,80 ✓A **OR** ✓MA R21,50 × 1,2 = R25,80 ✓A **OR** R21,50 × $\frac{20}{100}$ = R4,30 ✓MA R21,50 + R4,30 = R25,80 ✓A	1MA Multiplying by 120% 1A Answer 1MA Multiplying by 1,2 1A Answer 1MA Adding R4,30 1A Answer	(2)	F1
1.1.7	✓MA 400 ÷ 0,046 = R8 695,652 ≈ R8 695,65✓ A **OR** $\frac{400}{0,046}$ = R 8 695,652 ≈ R8 695,65	1MA dividing by 0,046 1A Correct answer	(2)	F1
1.2				
1.2.1	Discrete data only consists of whole numbers and continuous data consists of decimal numbers as well. ✓✓ O	2 O Correct explanation of both discrete and continuous data.	(2)	DH1
1.2.2	Western Cape ✓✓ A	2A Answer	(2)	DH1

3

Q	ANSWER	EXPLANATION		LEVEL
1.2.3	Range = Maximum value – Minimum value 44 143 – 63 ✓ RT = 44 080 ✓ A	2RT Correct values 1A Answer **Answer only, full marks**	(2)	DH1
1.2.4	205, 322, 362, 512, **1 177**, 3 959, 10 597, 12 193, 44 143 ✓ M Median = 1 177 ✓ CA	1M Arrangement 1CA Answer **Penalty:** **Penalise 1 mark if learner used all 10 provinces and got 844,5** **Answer only, full marks**	(2)	DH1
1.2.5	205 + 322 + 362 + 512 + 1 177 + 3 959 + 10 597 + 12 193 + 44 143 ✓ MA = 73 470 ✓ A	1MA Addition 1A Answer	(2)	DH1
1.3				
1.3.1	Males ✓✓ A	2A Answer	(2)	DH1
1.3.2	Bar Graph ✓✓ A	2A Answer	(2)	DH1
1.3.3	30 – 49 years old ✓✓ A	2A Answer	(2)	DH1
			[30]	

4

QUESTION 2

Q	ANSWER	EXPLANATION		LEVEL
2.1				
2.1.1	It means that people 65 years and younger, receiving **an annual income of R83 100 or less, does not have to pay tax.** ✓✓J	2J Reason explaining less than R83 100 and does not have to pay tax	(2)	F4

2.1.2	Income – pension – UIF = taxable income
	           ✓M ✓M
	R60 000 − (7,5% × 60 000) − R148,72
	= $R55\,351,28$ ✓CA
	          ✓M
	R55 351,28 × 12 = R664 215,36 ✓CA
	
	OR
	
	       ✓M
	R60 000 × 12 = R720 000 ✓CA
	
	R720 000 × $\frac{7,5}{100}$ = R54 000
	
	R720 000 – R54 000 = R666 000 ✓M
	
	R666 000 – (R148,72 × 12)
	= R666 000 – R1 784,64 ✓M
	= R664 215,36 ✓CA
	
	OR
	
	      ✓M
	R60 000 × 12 = R720 000 ✓CA
	
	R720 000 × $\frac{7,5}{100}$ = R54 000
	
	R148,72 × 12 = R1 784,64
	
	R54 000 + R1 784,64 = R55 784,64
	
	R720 000 – R55 784,64 ✓M✓M
	
	= R664 215,36 ✓CA
		1M Subtracting pension
		1M Subtracting UIF
		1CA Answer
		1M Multiplying by 12
		1CA Answer
		
		1M Multiplying by 12
		1CA Answer
		1M Subtracting pension
		1M Subtracting UIF
		1CA Answer
		
		1M Multiplying by 12
		1CA Answer
		1M Subtracting pension
		1M Subtracting UIF
		1CA Answer
			(5)	F3

Q	ANSWER	EXPLANATION		LEVEL
2.1.3	✓MA (R319 × 2) + (R215 × 2) = R1 068 per month ✓A ✓M R1 068 × 12 = R12 816 per year ✓ CA **OR** ✓MA (R319 + R319) + (R215 + R215) = R638 + R430 = R1 068 ✓A ✓M R1 068 × 12 = R12 816 per year ✓ CA **OR** R319 × 12 = R3 828 ⎫ R3 828 × 2 = R7 656 ⎬ ✓MA R215 × 12 = R2 580 ⎫ ✓A R2 580 × 2 = R5 160 ⎭ R7 656 + R5 160 ✓M = R12 816 ✓CA **OR** R319 × 2 = R638 ⎫ R638 × 12 = R7 656 ⎬ ✓MA R215 × 2 = R430 ⎫ ✓A R430 × 12 = R5 160 ⎭ R7 656 + R5 160 ✓M = R12 816 ✓CA **OR** 12 × 2 = 24 ✓MA R319 × 24 = R7 656 ⎫ ⎬ ✓A R215 × 24 = R5 160 ⎭ R7 656 + R5 160 ✓M = R12 816 ✓CA **OR**	1MA Addition and multiplication 1A Answer 1M Multiplying by 12 1CA Answer 1MA Addition A Answer 1M Multiplying by 12 1CA Answer 1MA Multiplication by 12 and 2 1A Both answers 1M Addition 1CA Answer 1MA Multiplication by 12 and 2 1A Both answers 1M Addition 1CA Answer 1MA for 24 1A Both Answers 1M Addition 1CA Answer		F2

6

	$12 \times 2 = 24$ ✓MA R319 + R215 ✓A $= R534 \times 24$ ✓M $= R12\ 816$ ✓CA	1MA for 24 1A Total or 1M Addition of both values 1M Multiplying by 24 1CA Answer		
			(4)	

2.1.4	R155 505 + 39% (R664 215,36 −
	R584 200) ✓RT
	              ✓SF
	$= R155\ 505 + (39\% \times R80\ 015,36)$
	$= R155\ 505 + R31\ 205,99$
	$= R186\ 710,99$ ✓CA
	
	          ✓M
	$R186\ 710,99 - R14\ 958 = R171\ 752,99$
	
	          ✓M
	$R171\ 752,99 - R12\ 816 = R158\ 936,99$
	
	          ✓M
	$R158\ 935,99 \div 12 = R13\ 244,75$ ✓CA
	
	No, her claim is NOT VALID. ✓J
		CA from Q 2.1.2 and Q 2.1.3
		
		1RT Correct tax bracket
		1SF Substitute into formula
		1CA Answer
		1M Subtract rebate
		1M Subtract medical tax credits
		1M Division by 12
		1CA Answer
		1J Opinion/Conclusion
			F4	

OR

Annual Tax payable:

$\checkmark$RT

R155 505 + 39% of income above R584 200

R155 505 + 39% × (R664 215,36 – R584 200)

$\checkmark$SF

$= R155\ 505 + \left(\dfrac{39}{100} \times R80\ 015,36\right)$

= R155 505 + R312 065,99
= R186 710,99 $\checkmark$CA

Rebate:

$\checkmark$M

R186 710,99 – R14 958 = R171 752,99

Medical Tax credits:

$\checkmark$M

R171 752,99 – R12 816 = R158 936,99

Monthly Tax payable:

$\dfrac{R158\ 936,99}{12}$ $\checkmark$M

= R13 244,75 $\checkmark$CA

No, her claim is NOT VALID. $\checkmark$J

1RT Correct tax bracket
1SF Substitute in formula
1CA Answer
1M Subtract rebate
1M Subtract medical tax credits
1M Division by 12
1CA Answer
1J Opinion

OR

Annual Tax payable:

$\checkmark$RT

R155 505 + 39% of income above R584 200

R155 505 + 39% × (R664 215,36 – R584 200)

$\checkmark$SF

$$= R155\,505 + \left(\frac{39}{100} \times R80\,015{,}36\right)$$

= R155 505 + R312 065,99
= R186 710,99 $\checkmark$CA

Rebate and medical tax credits:

$\checkmark$M $\checkmark$M

R186 710,99 – R14 958 – R12 816
= R158 936,99

Monthly Tax payable:

$\dfrac{R158\,936{,}99}{12}$ $\checkmark$M

= R13 244,75 $\checkmark$CA

No, her claim is NOT VALID. $\checkmark$J

1RT Correct tax bracket
1SF Substitute in formula
1CA Answer
1M Subtract rebate
1M Subtract medical tax credits
1M Division by 12
1CA Answer
1J Opinion

	OR			
	Annual Tax payable: $\checkmark$RT R155 505 + 39% of income above R584 200 R155 505 + 39% × (R664 215,36 − R584 200) $\checkmark$SF $= R155\ 505 + \left(\dfrac{39}{100} \times R80\ 015,36\right)$ $= R155\ 505 + R312\ 065,99$ $= R186\ 710,99$ $\checkmark$CA **Rebate:** $\checkmark$M R186 710,99 − R14 958 = R171 752,99 **Monthly tax before medical tax deductions:** $\dfrac{R171\ 752,99}{12}$ $\checkmark$M $= R14\ 312,75$ **Medical tax credits:** R14 312,75 − (2 × R319) − (2 × R215) = R14 312,75 − R638 − R430 = R14 312,75 − R1 068 $\checkmark$M = R13 244,75 $\checkmark$CA No, her claim is NOT VALID $\checkmark$J	RT Correct tax bracket 1SF Substitute in formula 1CA Answer 1M Subtract rebate 1M Division by 12 1M Subtract medical tax credits 1CA Answer 1J Opinion	(8)	
2.2				
2.2.1	$\checkmark$RT $\checkmark$M R92 400 − R37 700 = R54 700 $\checkmark$CA	1RT Correct values from table 1M subtraction/concept of difference 1CA answer	(3)	F1

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Q	ANSWER	EXPLANATION		LEVEL
2.2.2	✓MA 12 x R20 725 = R248 700 ✓A Private High School in 2025 ✓RT **OR** 2020: R148 300 ÷ 12 = R12 358,33 ✓MA 2025: R248 700 ÷ 12 = R20 725 ✓A Private High School in 2025 ✓RT	1MA Multiplying by 12 1A Answer 1RT Reading year from table 1MA Division by 12 1A Answer 1RT Reading year from table	 (3)	F1
2.2.3	**Year 1 (2022)** ✓MA R88 635,77 + (R88 635,77 × 6,6%) = R94 485,73 ✓A **Year 2 (2023)** R94 485,73 + (R94 485,73 × 6,6%) = R100 721,79 ✓CA **Year 3 (2024)** R100 721,79 + (R100 721,79 × 6,6%) = R107 369,43 ✓CA University fees for 2025 – savings = shortfall ✓RT R107 600 − R107 369,43 = R230,57 ✓CA Joshua is correct, R250 would cover the shortfall ✓O **OR** Joshua is incorrect, the amount is less than R250 **OR**	1MA Multiplying by 6,6% 1A Answer for 1st year 1CA Answer for 2nd year 1CA Answer for 3rd year 1RT Reading University fees from table for 2025 1CA Difference 1O Opinion *NOTE: If Compound interest formula was used:* *Award FULL MARKS, given that the answer is 100% correct.* *NO marks if answer is incorrect.*		F4

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Year 1 (2022)
R88 653,77 × $\frac{6,6}{100}$ = R5 851,14882 ✓MA
✓A
R88 653,77 + R5 851,14882 = R94 504,91882
 	
Year 2 (2023)
R94 504,91882 × $\frac{6,6}{100}$ = R6 237,324642
 	
R94 504,91882 + R6 237,324642
= R100 742,2435 ✓CA
 	
Year 3 (2024)
R100 742,2435 × $\frac{6,6}{100}$ = R6 648,988068
 	
R100 742,2435 + R6 648,988068
= R107 391,2316
= R107 391,23 ✓CA
 	
Difference:
  ✓RT
R107 600 – R107 391,23 = R208,77 ✓CA
 	
Joshua is correct, R250 would cover the shortfall   ✓O
 	
OR
 	
Joshua is incorrect, the amount is less than R250
 	
OR
 	
Year 1 (2022)
        ✓MA
R88 653,77 x 1,066 = R94 504,91882 ✓A
 	
Year 2 (2023)
R94 504,91882 x 1,066 = R100 742,2435 ✓CA
 	
Year 3 (2024)
R100 742,2435 x 1,066 = R107 391,23 ✓CA
 	
Difference:
  ✓RT
R107 600 – R107 391,23 = R208,77 ✓CA
 	
Joshua is correct, R250 would cover the shortfall   ✓O
 	
OR
 	
Joshua is incorrect, the amount is less than R250
	1MA Multiplying by 6,6%
	1A Answer for 1st year
	1CA Answer for 2nd year
	1CA Answer for 3rd year
	1RT Reading University fees from table for 2025
	1CA Difference
	1O Opinion
	
	1MA Multiplying by 1,066
	1A Answer for 1st year
	1CA Answer for 2nd year
	1CA Answer for 3rd year
	1RT Reading University fees from table for 2025
	1CA Difference
	1O Opinion
		
		(7)	

Q	ANSWER	EXPLANATION		LEVEL
2.3				
2.3.1	R200,00 ✓✓RT	2RT Reading from table	(2)	F1
2.3.2	Conversion to rand: $\frac{69,36}{100} = R0,6936$ $\frac{81,60}{100} = R0,8160$ ✓C First 50 kWh 50 × R0,6936 = R34,68 ✓A 286 kWh – 50 kWh = 236 kWh ✓A Next 236 kWh 236 x R0,8160 = R192,576 ✓CA Total: R34,68 + R192,576 = R227,256 = R227,26 ✓CA **OR** First 50 kWh 50 x 69,36 = 3 468c ✓A 286 kWh – 50 kWh = 236 kWh ✓A Next 236 kWh 236 x 81,60 = 19 257,6c ✓CA Total: 3 468 + 19 257,6 = 22 725,6c ✓CA Conversion to rand: ✓C $\frac{22\ 725,6}{100} = R227,256$ = R227,26	1C Conversion to rand 1A Answer for 50 kWh 1A Difference 1CA Answer 1CA Total 1A Answer for 50 kWh in cents 1A Difference 1CA Answer 1CA Total 1C Conversion to rand	 (5)	F3

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Q	ANSWER	EXPLANATION		LEVEL
2.3.3	Cost excluding VAT: $R720 \times \dfrac{100}{115}$ ✓MA $= R626,0869565$ ✓A **OR** $\dfrac{R720}{1,15}$ ✓MA $= R626,0869565$ ✓A Cost excluding fixed monthly fee: R626,0869565 – R200 = R426,0869565 ✓CA Cost per unit in Rand: $\dfrac{70,855}{100} = R0,70855$ ✓C kWh used: $\dfrac{R426,0869565}{R0,70855} = 601,3505843$ $= 601,35$ kWh used ✓CA	1MA for VAT exclusive method 1A Answer 1CA Cost excluding fixed monthly fee 1C Conversion 1CA Answer	(5)	F2
				[44]

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QUESTION 3

Q	ANSWER	EXPLANATION		LEVEL
3.1				
3.1.1	Range = Maximum – Minimum ✓M = 78,2% - 60,6% ✓ MA = 17,6% ✓ A	1M Range concept 1MA Correct values in correct order 1A Answer	(3)	DH2
3.1.2	Bi-modal = 70,2% ✓A and 78,2% ✓A	2A Correct Answers	(2)	DH2
3.1.3	Arrangement of values: 60,6 ; 67,8 ; 70,2 ; 70,2 ; 72,5 ; 73,9 ; 75,1 ; 75,8 ; 78,2 ; 78,2 ✓MA Median = $\frac{72,5 + 73,9}{2}$ ✓MA $= \frac{146,4}{2}$ = 73,2 ✓ CA	1MA Correct arrangement 1MA Correct values divided by 2 1CA Answer	(3)	DH3
3.1.4	Continuous ✓A The data consists of decimal numbers. ✓✓J **OR** Continuous ✓A The data can be measured ✓✓J	1A Continuous 2J Correct definition	(3)	DH4
3.1.5	IQR = Q3 – Q1 Q3 = 75,8% Q1 = 70,2% ✓A IQR = 75,8% - 70,2% ✓M = 5,6% ✓ CA	1A Correct Quartile 1 and 3 values 1M IQR method/concept 1CA Answer	(3)	DH3
3.1.6	The third Quartile value (Q3) represents 75% of the data collected. ✓✓ J **OR** The third Quartile value (Q3) represents $\frac{3}{4}$ of the data collected. ✓✓ J	2J Explanation of Q3, must include 75% **Accept any reasonable/ valid explanation including 75%**	(2)	DH4
3.1.7	Probability $= \frac{4}{10}$ ✓✓MA $= \frac{2}{5}$ ✓S	1MA Denominator 1MA Numerator 1S Simplification	(3)	P2

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Q	ANSWER	EXPLANATION		LEVEL
3.2				
3.2.1	**Ordinary pass rate:** The pass rate dropped/decreased/fell from 2015 to 2016 and then increased/went up/went higher from 2016 to 2018. ✓✓J **University pass rate:** There is a continuous increase from 2015 to 2018. ✓✓J **OR** **University pass rate:** There is an increase from 2015 to 2016, and another increase from 2016 – 2017 and another increase from 2017 – 2018 ✓✓J	2J Explanation of the trend of ordinary pass rate 2J Explanation of the trend of university pass rate **Penalise learner if years are not used**	(4)	DH4
3.2.2	Biased ✓A The data was only collected from one province instead of all the provinces. ✓J **OR** Biased ✓A The data was only collected from a small part of the country. ✓J **OR** Biased ✓A The data does not represent the whole country, only one part. ✓J	1A Biased 1J Explanation **Accept any valid/reasonable answer referring to the entire country or only part of the country**	(2)	DH4

3.2.3	Survey questions:
	  1. Did you attend school every day?
	  2. How long before the exams did you start studying?
	  3. Did you study every day?
	  4. What are you going to study next year?
	  5. What or who influenced your choice to study further?
	  6. Who will finance your studies?
	  7. Will you get a part-time job to help pay for your studies?
	  8. How did COVID-19 influence your approach to school and your studies?
	  9. Did any of your parents attend university?
		4O Four questions asked relating to the University pass rate
		
		9 Possible options are given – mark only the first four answers; any relevant/valid questions relating to a learner who achieved a university entrance can be accepted.
			(4)	DH4

			[29]	

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QUESTION 4

Q	ANSWER	EXPLANATION		LEVEL
4.1				
4.1.1	3 days in Jan + 28 days in Feb + 31 days in March ✓MA = 62 *days* ✓CA ✓M $\dfrac{\$1\,348\,258\,224}{62} = \$21\,746\,100,39$ ≈ \$22 000 000 ✓R	1MA Mark for adding 1CA for Answer 1M for Dividing by days 1R Rounding to the nearest million	(4)	F3
4.1.2	62 *days* × 60 *tickets* × \$76 = \$282 720 ✓M ✓MA ✓CA **OR** 60 tickets × \$76 = \$4 560 per day ✓MA ✓M \$4 560 × 62 days = \$282 720 ✓CA **OR** 62 days × \$76 = \$4 712✓M ✓MA \$4 712 × 60 tickets = \$282 720 ✓CA	1M Multiplying tickets by days **(CA from 4.1.1.)** 1MA Multiplying tickets by \$76 1CA Mark for answer 1MA Multiplying tickets by \$76 1M Mulitplying with days **(CA from 4.1.1.)** 1CA Answer 1M Multiplying days by \$76 **(CA from 4.1.1.)** 1MA Multiplying amount by 60 1CA Answer	(3)	F2
4.1.3	✓M \$282 720 × 11,8321 = *R*3 345171,312 ✓CA	**(CA from 4.1.2.)** 1M Multiply by 11,8321 1CA Mark for answer	(2)	F1

Q	ANSWER	EXPLANATION		LEVEL
4.1.4	$60 \times R120 = R7\ 200$ *total income* ✓MA $40\% \times R7\ 200 = R2\ 880$ *lockdown income* ✓CA ✓M $R7\ 200 - R2\ 880 = R4\ 320$ loss **OR** 60 people $\times \dfrac{40}{100}$ $= 24$ people allowed to attend daily ✓CA 24 people $\times R120 = R2\ 880$ Total $= 60$ people $\times R120 = R7\ 200$ ✓CA ✓M Loss $= R7\ 200 - R2\ 880 = R4\ 320$ loss	1MA Total income per day 1CA Calculating 40% of total income 1M Subtracting difference 1MA Calculating number of people attending daily 1CA Calculating total income per day 1M Subtracting difference	 (3)	F2
4.2				
4.2.1	R200 ✓✓A	2A Marks for answer	(2)	F1
4.2.2	Minimum fee of R30 when you make a deposit ✓✓A **OR** When you make a deposit at FNB bank **OR** When you make a deposit of less than R5 000 **OR** When you make a deposit of R5 000 or less **OR** Minimum fee when you make a deposit of less than R5 000 **OR** When you make a deposit at FNB of less than R5 000	2A Marks for answer	 (2)	F2

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Q	ANSWER	EXPLANATION		LEVEL
4.2.3	$R8,40 + (R1,49 \times \dfrac{R11\,300}{100})$ ✓MA $= R8,40 + R168,37$ $= R176,77$✓CA **OR** $\dfrac{R11\,300}{100} = 113$ $113 \times R1,49 = R168,37$✓MA $R8,40 + R168,37 = R176,77$ ✓CA	1MA Multiplication by R11 300 and R1,49 1CA Mark for answer 1MA Multiplying 113 by R1,49 1CA Answer	(2)	F2
4.2.4 (a)	✓MA $\dfrac{2,4\%}{12\ ✓A} = 0,2\%$ ✓CA **OR** $\dfrac{2,4}{100} = 0,024$ ✓MA $\dfrac{0,024}{12}$ ✓A $= 0,002$ ✓CA	1MA Correct percentage 1A Mark for dividing by 12 1CA Mark for answer 1MA Calculating decimal 1A Division by 12 1CA Answer	(3)	F1

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Q	ANSWER	EXPLANATION		LEVEL
4.2.4 (b)	Month 1 ✓M R11 300 × 0,002 = R22,60 ✓CA R11 300 + R22,60 = R11 322,60 ✓CA Month 2 R11 322,60 × 0,002 = R22,6452 ✓CA R22,60 + R22,65 = R45,25 ✓CA **OR** Maand 1 ✓M R11 300 × $\frac{0,2}{100}$ = R22,60 ✓CA R11 300 + R22,60 = R11 322,60 ✓CA Month 2 R11 322,60 × $\frac{0,2}{100}$ = R22,6452 ✓CA R22,60 + R22,65 = R45,25 ✓CA	**CA from 4.2.2** 1M Multiplication by decimal 1CA Interest for 1st month 1CA Total interest for 1st month 1CA Interest for 2nd month 1CA Total interest **CA from 4.2.2** 1M Multiplying by 0,2% 1CA Interest for 1st month 1CA Total interest for first month 1CA Interest for 2nd month 1CA Total interest *NOTE: If compound interest formula was used:* *Award FULL MARKS, given that the answer is 100% correct.* *NO marks if answer is incorrect.*	(5)	F3
4.3				
4.3.1	✓M R40 000 ÷ 300 = R133,33 ... ✓ CA ≈ R130,00 income per person✓R **OR** $\frac{R40\ 000}{300}$ ✓M = R133,3333333... ✓CA ≈ R130 ✓R	1M Division by 300 1CA Answer 1R Rounding 1M Division by 300 1CA Answer 1R Rounding	(3)	F2

Q	ANSWER	EXPLANATION		LEVEL
4.3.2	$\checkmark$RT $(R40\,000 - R30\,000) \div 500$ $\checkmark$M $\checkmark$MA $= R20\ cost\ per\ person$ $\checkmark$ CA **OR** $\dfrac{R40\,000 - R30\,000}{500}$ $\checkmark\checkmark$MA $= \dfrac{R10\,000}{500}$ $\checkmark$M $= R20$ per person $\checkmark$CA	1 RT Mark for the fixed expenses (R30 000) 1MA Mark for subtracting 1M for Dividing by 500 1 CA Mark for cost per person 2MA Calculating difference between total expense and fixed cost 1M Dividing by 500 1CA Answer	(4)	F2
4.3.3	$\checkmark$M $\dfrac{R130 - R20}{R20} \times 100 = 550\%$ $\checkmark$CA $\checkmark$M **OR** $\dfrac{R130 - R20}{R20} \times 100$ $\checkmark$M $= \dfrac{R110}{R20} \times 100$ $\checkmark$M $= 550\%$ $\checkmark$CA	**CA from 4.3.2** 1M Difference between amounts 1M Division 1CA Percentage 1M Difference 1M Division 1CA Percentage	(3)	F2

Q	ANSWER	EXPLANATION		LEVEL
4.4				
4.4.1	**Grade 11s from 2014 – 2019:** ✓MA 827 677, 864 618, <u>858 769</u>, 869 513, 890 971 **Grade 12s from 2014 – 2019:** ✓MA 501 303, 512 735, <u>534 484</u>, 610 178, 644 536	1MA Correct order of grade 11s 1MA Correct order of grade 12s (2)		DH 2
4.4.2	Median = 534 484 Quartile 3 (Q3) = $\dfrac{644\ 536 + 610\ 178}{2}$ = $\dfrac{1\ 254\ 714}{2}$ = 627 357 ✓A Quartile 1 (Q1) = $\dfrac{501\ 303 + 512\ 735}{2}$ = $\dfrac{1\ 014\ 038}{2}$ = 507 019 ✓A IQR = Q3 – Q1 = 627 357 – 507 019 ✓M = 120 338 ✓CA	1A Q3 1A Q1 1M Concept of IQR 1CA Answer **If range is used, no marks.** **CA only if other values are used and the concept IQR is used.** (4)		DH3
4.4.3	None ✓✓A No mode	2A Answer (2)		DH 1
4.4.4	Mean = $\dfrac{\text{Total}}{5}$ Mean = ✓MA $\dfrac{501\ 303 + 512\ 735 + 534\ 484 + 610\ 178 + 644\ 536}{5}$ ✓MA = $\dfrac{2\ 803\ 236}{5}$ = 560 647,2 ✓CA	1MA Addition or total 1MA Division by 5 1CA Answer (3)		DH2
			[47]	
			TOTAL: 150	